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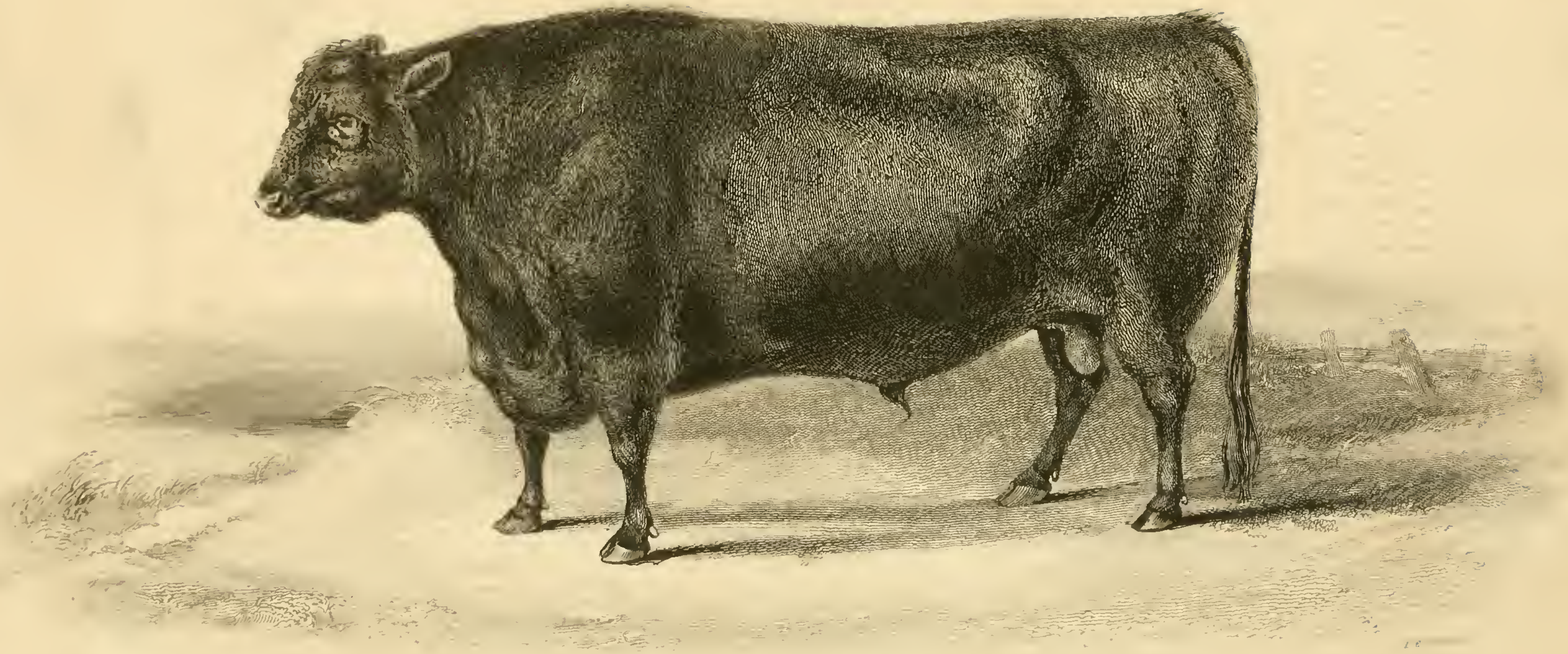

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THE FARMER'S MAGAZINE.

VOLUME THE FOURTH.

(SECOND SERIES.)

JULY TO DECEMBER, MDCCCXLI.

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THE FARMER'S MAGAZINE.

JULY, 1841.

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PLATE I.

The subject of the first Plate is an Aberdeenshire Polled Bull, the property of Mr. Machray, of the Royal Hotel and of the Torry Farm, to which a prize of Fifteen Sovereigns was awarded at the Meeting of the Highland Agricultural Society, in October, 1840.

PLATE II.

DEER-STALKERS REFRESHING AT THE BUTTERY HATCH.

(For Description, see page 16.)

LIEBIG'S ORGANIC CHEMISTRY.

BY J. TOWERS.

We propose, in a series of short articles, to bring this celebrated work before the reading agriculturist, in order to afford it an opportunity to acquire friends by its own individual merits; and are especially led to do this in consequence of an extremely well-written paper, which has just appeared, as the first of a series, in the *Quarterly Journal of Agriculture*, No. 53, for June, p. 92, et seq., wherein the book is attacked, and its principles, almost without exception, exposed to doubt and severe censure. We will cite the leading passages as we find them, in order to do justice to both parties, adding such remarks as may tend to elucidate, or to correct misconstruction.

First, then, we are informed that "shortly before the last meeting of the British Association, the chemical world, particularly that part of it which feels an interest in the application of the science to physiology, began anxiously to expect the appearance of the above work, which had been promised some time previously; and, from the well known character and exalted reputation of its author, great advantages were expected to accrue to the agriculturist by the dissemination of sound and correct principles, upon which he might found his rules for practice."

The writer tells us that he "hailed the work when it appeared, with feelings somewhat akin to those experienced at the arrival of some trusty counsellor, who, we feel certain, will dispel all our doubts concerning some point upon which we have long felt a deep and thrilling interest." But he adds, after perusing the book with great care and deep attention, "we left it with feelings of disappointment and regret."

We entreat the reader to notice the following passage, because it will serve as a key to the mysteries of the entire critique. The writer tells us that he is himself a stout theorist—one who avows that he belongs "to that class of individuals who, when they have once imbibed any opinion, are inclined obstinately to adhere to it until some very decided *proof* of its fallacy has rendered the position no longer tenable." With this avowal, we receive with some "grana sales" the "meed of praise" doubtfully and faintly awarded in the following terms:—"No doubt" the work "contains much that is very valuable and instructive, and much altogether new to us; but still, on the whole, it appeared to resemble a splendid fabric, which at a distance presented an aspect at once of elegance and durability, but which, on a nearer approach, exposed to view so frail a foundation that we feared to touch it, lest the whole should crumble to dust. The processes of reasoning and the chains of argument introduced throughout the work are in themselves most beautiful, and firmly linked together; but we fear that careful examination will frequently detect a serious flaw in the *first* link, to which all the rest owe their value and support."

We are, by these passages, prepared to investigate the calculations and arguments by which the writer pretends to overthrow the entire theory, and to prove, *de facto*, that the foundation being rotten, or built on sand, the entire superstructure is utterly fallacious and worthless. Before we refer to the critique again, it will however be but just to observe that its author is, as we have seen, an avowed theorist; one who bases his faith and argument solely upon his cherished theory of *Humus*—a theory that has called forth much noisy and vaporing assertion during the last ten years, during which the substance, or essence, or whatever else it may be—something or nothing—has thrice changed its name, and more frequently the proportional equivalents of its chemical constituency.

After citing a paragraph from Liebig, p.p. 67, we have the following remark:—" Here then we have a most positive and unqualified contradiction of all that has been said or written upon the important properties of *humus*, and to which we have been in the habit of referring for a solution of almost every difficulty which has opposed itself to our advancement in the arduous undertaking of unravelling the mysteries of vegetable physiology."

How reduced spit-dung, black leaf-mould, or any other decomposable substance which operates as manure in the soil, can by any means unravel those mysteries, we are not prepared to decide; we acquire, however, something " altogether new to us," and henceforth must consider the *mixen* an adjunct to the microscope, when engaged in physiological investigations!

Our present object is the discovery of truth; and our first step to obtain a glimpse of it, shall be to follow the lead of our critic, and copy his quotation from p. 4, of *The Organic Chemistry*; for thus we may obtain some idea, not of what *humus is*, but of the errors and confusion in which it has involved its theoretical disciples.

" The fertility of every soil is generally supposed by vegetable physiologists to depend on the presence in it of a peculiar substance, to which they have given the name of *humus*. This substance, believed to be the principal nutriment of plants, and to be extracted by them from the soil in which they grow, is itself the product of the decay of other plants.

" *Humus* is described by chemists as a brown substance, easily soluble in alkalies, but only slightly soluble in water; and produced, during the decomposition of vegetable matters, by the action of acids and alkalies. It has, however, received various names, according to the different external characters and chemical properties which it presents. Thus *ulmin, humic acid, coal of humus*, and *humin*, are names applied to the modifications of *humus*." So far the quotation; and it is correctly added by the writer, on the authority of Liebig, that " so great are the differences of these substances, that chemical analysis proves the proportion of carbon (i. e. charcoal in a pure condition) in some of them to be as low as 57 per cent., whereas, in others it amounts to 72 per cent."

Thus, we perceive that writers on agriculture have assumed the *humus* of the laboratory to be that nutritive substance of the soil, which they conceive has been introduced either by natural means, or by the labour of man in the form of manure. Let the reader duly appreciate this first great position of the German philosopher, and he will be set a little upon his guard. Before we condemn, let us plainly perceive what is aimed at and asserted.

The following abbreviated quotation from the article on " Arable Land," of the *Penny Cyclopedia*, will convey some further knowledge of what the *real humus* of land is supposed to be. " It has been accurately analyzed and described by Fourcroy, Davy, Chaptal, and Theodore de Saussure. (See *Recherches Chimiques sur la Vegetation*. Paris, 1804, 8vo.) This substance has been called *vegetable mould*; but as this is not a very distinct term, we shall, after Thäer and other eminent writers on agriculture, adopt the name of *humus* when speaking of it. Humus is a dark, unctuous, friable substance, nearly uniform in its appearance. It is a compound of oxygen, hydrogen, carbon, and nitrogen, which, with the exception of nitrogen found only in some substances, are the elements of all animal and vegetable substances. It is the result of the slow decomposition of organic matter in the earth, and is found in the greatest abundance in rich garden mould, or old neglected dung-hills. It varies somewhat in its qualities and composition, according to the substances from which it has been formed, and the circumstances attending their decay. It is the product of organic power, *such as cannot be compounded chemically*. Humus is the product of living matter, and the source of it. It affords food to organization. Without it, nothing material can have life. The greater the number of living creatures, the more humus is formed; and the more humus, the greater the supply of nourishment and life."

We stop here, for the present; but we leave matter sufficient for contemplation: and our next shall adduce what remains of importance in the fore-named article on humus, which we deem to be the most simple and comprehensive in its statements of any we have met with. Our present limits preclude farther observation—especially as it would be difficult in the short space of time now left us—to show, by other authorities, what spurious substance it is which Liebig assails. We must render the subject clear, by divesting it of fallacy; and then the field of investigation will be fairly open before us.

(*To be continued.*)

A VIEW OF THE PAST AND PRESENT STATE OF AGRICULTURE IN NORTHUMBERLAND.

BY JOHN GREY, OF DILSTON.

(*From the Journal of the Royal Agricultural Society of England.*)

In endeavouring to comply with the request conveyed to me by Earl Spencer, from the Journal Committee, " that I would give some account of the present state of agriculture in the best districts of Northumberland," it may not be unprofitable to occupy a little time in taking a hasty retrospect of the state of this part of the country, which continued in a great measure wild and uncultivated so late as the beginning of the last century, when peace and industry had produced their happy effects in the improved appearance and increased productiveness of the more southern provinces of the kingdom. And if it should excite surprise that large districts, which even within the last eighty years were in a state of nature, covered with broom, furze, or rushes—the indigenous productions of the soil; which were the latest in attracting the attention of the husbandman, and experiencing the benefit of his skill and industry, should in the interval have outstripped those in the march of agricultural improvement which had been for centuries in a course of cultivation; the fact may perhaps be in some measure accounted for by the existence of the very circumstances which at first sight seem unfavourable to such a result. Agriculture had begun to experience considerable encouragement and to make considerable progress in different parts of England, while the country on both sides of the Scottish borders continued to be the scene of rapine and violence—of hostile incursions and of predatory warfare. Such a state of society afforded no security for life, and no protection for property—the fruits of industry were too uncertain and precarious to induce to its exercise in the cultivation of the soil, and the habits and dispositions of the people were little fitted for the task. Nor did they for a long time after that blessed union had been effected, which put an end to the state of hatred and hostility which existed between the two countries, and which has contributed so essentially to the happiness and prosperity of both, betake themselves to settled and industrious habits.* They lived in the houses of the meanest description, and the accommodation supplied to their cattle was scanty and inconvenient. The country remained generally uninclosed; and the part on which they bestowed cultivation, such as it was, consisted of small crofts adjoining their dwellings. The plough then in use is described as a clumsy and inefficient instrument; and the harrow was constructed without joints and without iron, of branches of the mountain-birch, fixed together with wooden pegs, with tines of the tough broom,† which it was the business of the husbandman to sharpen or renew by help of his clasp-knife, while his unshod cattle, yoked by hempen traces, were turned off to regale themselves upon the neighbouring waste. The rent then paid consisted of a contribution in kind from the produce of the land and in personal service. Such was the state of things in the border counties at a period when the fields of "merry England" were already divided by luxuriant hedge-rows, and yielded their annual harvests to the cultivator's toil. But this apparently unpromising state of things contained within it the seeds of a rapid improvement, and the growth of a system of agriculture, approaching probably as near to perfection as any that this country at present exhibits. Habits of domestic peace and industry gradually succeeded those of broils and discord. The open country, hitherto undrained of its fertility, offered a tempting field for the exercise of skill, industry, and enterprise. But few inclosures of inconvenient size, and fences of wasteful dimensions, stood in the way of laying out and dividing farms into fields of approved size and convenient arrangement; and what is of still greater importance, perhaps, few of those customs and prejudices were to be overcome and uprooted which too frequently impede the introduction of improvements among the occupiers of anciently cultivated districts. Cultivation continued gradually to extend itself: an improvement took place in the farm-buildings and offices, but still great tracts of land were not brought regularly under the plough, most farms being divided into what was called the *infield* and *outfield* land; the former being subjected to a severe course of cropping, with very inadequate cultivation; the latter left to its native produce as a pasture for sheep and young cattle, or if choice portions of it were occasionally broken up, it was to rob it of its fertility by the production of a succession of corn crops, and then to leave it to recruit itself by several years of pasture. But it was not till about the middle of the last century that the rapid and spirited improvement in the agriculture of Northumberland began to show itself, from which we must date the era of its present advanced system.

Men of intelligence, activity, and industry were attracted from other quarters to settle in the fertile vales in the northern parts of this county, of whom none bear a more distinguished name in the annals of agricultural improvement, or are more deserving of the praise and gratitude of their countrymen, than the late Messrs. Culley. These able men, who had traversed the provinces of the land which were considered to possess the most approved modes of husbandry and the best descriptions of stock, migrated in the year 1767 from their paternal property on the banks of the Tees into the district in Northumberland called Glendale, carrying with them superior knowledge and intelligence, which they brought at once to bear in their extensive undertakings with unremitting application and perseverance. The example set by these and other energetic and spirited agriculturists, together with the signal success which attended their exertions, gave a stimulus to the surrounding district, and in a few years the inexpert operations and languid system of husbandry which had previously prevailed gave place to others of extraordinary expedition and efficacy. The owners of property too, fortunately for themselves, for the cause of improvement, and the benefit of the country at large, co-operated with their spirited tenants in the great work which was in progress, by giving them farms of such size as to afford scope for their operations to be conducted with economy and effect, and for such length of lease (not less than twenty-one years) as afforded the guarantee of a return for their outlay and industry. Without the security and inducement to expend capital, which leases afford to tenants, such a rapid change as that we are contemplating never could have been effected. The growing of turnips had been introduced partially and upon a small scale, sown broadcast and hoed by gardeners, for several years before; but it was not until between the years 1760 and 1770 that the system now in universal practice of sowing them upon raised drills, with manure well prepared and applied immediately below the plants, affording at once the largest produce at the least expense, with by far the most effectual working of the land and removal of weeds, was commenced by that intelligent agriculturist, Mr. W. Dawson, on his farm in Roxburghshire, and ten or twelve years more elapsed before it came into general use on the borders.* The prevalence of turnip-growing in the place of naked fallows, or crops of peas full of weeds, together with the use of artificial grasses, which was introduced about the same time, made a complete revolution in the management and value of land, and added immensely to the productiveness of the country. The money which was made by farming was again eagerly applied, under the encouragement of leases, to the reclaiming of waste lands and the promotion of agricultural improvement. Section after section of the *outfield* lands, so called, were brought into productive cultivation; the sober labour of the flail became too slow a process for the increased produce. Threshing machines, worked by horses or driven by water, and sometimes by wind, became general, although in our days the latter fickle and uncertain power has been universally superseded by steam; comfortable and substantial farm-houses were built, and commodious sets of farm-offices, laid out upon regular and compact plans, were erected in central situations, with roads diverging from them so as to give the easiest access to all parts. The gradual increase of rents after the termination of the unfortunate American war in 1783, encouraged landlords in the outlay necessary to effect such substantial and permanent improvements; an increase in the demand for labour in manufactures, in the rate of wages, and in the population, all tended to an advance of the farmer's profits, and a consequent increase of the competition for land and of the rents offered for it. And when the war arising out of the French Revolution, with the extraordinary expenditure and unprecedented issues of paper-money attending it, were in full operation, producing, if not real wealth, yet something which for the time stood in the place of it, the rent of farms which fell out of lease from the year 1795 to 1085 were advanced frequently three, and in some cases fourfold. Then it was that the last great impulse was given to the already rapidly improving system of Northumbrian agriculture. The farmers found themselves in possession of abundant capital, with habits, energy, and capacity for the greatest exertions; the last remaining portions of land which were by any means accessible to the plough were put in requisition; large stones were dug up and removed from the sides of mountains to procure an arable surface; bogs were drained, and lands hitherto open and unproductive were enclosed, and, by the application of lime and good husbandry, made to wave with golden harvests. Reductions of rent, failure of tenants, and change of occupancy, were the effect of subsequent events; but still the system of agriculture, which a time of unexampled prosperity produced, has been maintained, and a substitute has even in a great measure been found for the high prices of the war, in the increased produce obtained by recent improvements, such as the use of bone manure, extensive and systematic draining, subsoil ploughing, and a somewhat better understanding of the application of animal and vegetable chemistry to agricultural objects, or, in other words, the combination of the science with the practice of agriculture. The grand desideratum, however, of basing the practice of agriculture upon scientific principles, it must be confessed, has as yet made but small progress. To effect that important end, the culture of the mind must precede that of the land; and although the farmers of the district now under review, holding large tracts of land, and possessed of great capital, have received a more liberal education, and are more distinguished for intelligence and information, than many others, yet the daily occupations of the practical farmer, as such, are in no way favourable to scientific research and intellectual attainments. We must look to other quarters for the consummation of this great object; and happily a new era is opening upon us, and brighter prospects are rising to our view: the great and influential of the land have engaged themselves in the work. This most important branch of our national industry, and source of our national prosperity, is no longer to be left for its advancement to the chance-directed discoveries of the unlettered rustic. When wealth and intelligence lead the pursuit, and call the resources of knowledge and science to their aid, it is not unreasonable to expect that sources of fertility and productiveness, as yet unknown, will be developed—that the practice of agriculture will be founded upon principles which, though in strict dependance upon philosophic rules, shall be rendered familiar to the understandings of "the rough-shod race," whose stolidity has hitherto been subject of proverbial reproach with the learned; and that agriculture shall take the stand among the sciences to which it is so justly entitled, as well by the great interest which attaches to it as by the immense national importance which it possesses.

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* Such was the state of society in the part of the county traversed by the Roman wall that those great antiquaries, Sir Robert Cotton and Mr. Cambden, were deterred from following its course in the year 1600, as stated in Cambden's own words:—"From hence the wall bends about by Iveston. Forster and Chester on the wall near Busy-Gap, noted for robberies, where we heard there were forts, but durst not go and view them for fear of the Moss-Troopers." And Warburton, who was Somerset Herald to George II., and published his "Vallum Romanum" in 1753, says, in reference to the same subject, "Such was the wild and barren state of this country, even at the time I made my survey (1715), that in those parts now called the wastes, and heretofore the debateable grounds, I have frequently discovered the vestiges of towns and camps that seemed never to have been trod upon by any human creature than myself since the Romans abandoned them; the traces of streets and the foundations of the buildings being still visible, only grown over with grass." And it is certain that it was not till after the accession of George III., in 1760, that the King's writ might be said to run throughout the county.

† The now highly-cultivated Vale of the Till was in former days much covered by broom—the classic "Planta Genista" which gave the name to the powerful dynasty of the Plantagenets. "In the beginning of the 16th century a body of Scots, who had concealed themselves in the tall broom in Milfield Plain, were attacked and defeated by Sir Wm. Bulmer, of Brancepeth Castle, who commanded the forces of the bishopric of Durham. 500 or 600 of the Scots were killed, and 400 taken prisoners."—(*History of Northumberland.*) And a story is told of a farmer in Milfield, eighty years ago, who lost a mare for some weeks, which at length emerged from the forest of broom followed by a foal. Tines of broom and other kinds of wood are used in some parts of Holland at this day.

Having hastily traced the progress of Northumbrian agriculture from the most imperfect to its present advanced state, it remains to show in detail what the practice is in the best districts, which I understand to be the object required.

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* It is stated in Bailey and Culley's Survey of Northumberland in 1797, that Mr. Pringle, formerly a surgeon in the army, who had an estate near Coldstream, was the first person in these parts who cultivated turnips in drills, in 1757, which he made 3½ feet wide, and that he had taken the idea from Tull's book on Husbandry. And that Mr. Dawson, who entered upon the farm of Frogden, near Kelso, in 1762, adopted the practice, trying drills of various width, and deciding upon those of 30 inches, as best suited for horse-hoeing and for producing a full crop.

And at the commencement it may be necessary to specify which those districts are, and why they are entitled to a preference over the others. The county of Northumberland, as is well known, consists in great measure of mountain pasture and of bleak unprofitable moors; while the vales, beautiful and fertile as they are, by which these mountains are intersected, and the level country on the coast, form but the exception to the general rule. In the southern part of the county, the valleys of North and South Tyne, with others branching from them, and also that of the Wansbeck, contain land of excellent quality, and afford many specimens of superior husbandry; but in general the farms are on too small a scale, and their occupiers too limited in means, to entitle them to a place in the list of those distinguished agriculturists who occupy extensive farms in the highly-cultivated districts of Glendale and Bambrough Wards. The Vale of the Coquet, too, is fertile and well cultivated: but in pointing to the parts of the county to which the following remarks must be understood especially to apply, I would take the line along the base of the Cheviots, extending from Whittingham by Wooler to the banks of the Tweed, as a district universally adapted to and occupied in the turnip course of husbandry; and that along the coast from Warkworth to Berwick, as being of a stronger and heavier quality of soil, and more generally fitted for the growth of wheat and beans, intermixed however with many portions of fine turnip loam and of rich grazing pasture; in other parts of the county which are not included within these limits, good farms and good culture are to be found, and the same system prevails, though with certain modifications, throughout.

It will be necessary to treat of the two districts specified above separately; but as the tenure on which farms are generally held is a subject common to both, I shall begin by observing that the custom prevails generally of letting farms upon *leases* for twenty-one years, a custom which has tended very materially to increase the value of property to the owner, and to produce the high state of cultivation which is found to prevail in an especial manner in the district extending from the source of the Till to the Scottish border at Carham on the Tweed, comprising many excellent farms, varying in annual rent from 500*l.* to upwards of 2000*l.* The fall of rents and the dissatisfaction or change of tenants after the year 1815, together with the apprehension of still farther changes, had the effect of curtailing the length of leases in many instances, but still on the best estates and largest farms the term of twenty-one years is adhered to; on others, where less capital is to be employed, and where few extensive improvements are contemplated, the term of fifteen years has been adopted, which is very suitable for farms where the five-course rotation prevails, as giving the tenant three full courses over all his land. Some few exceptions do exist, and those in high quarters, to the granting of leases; but wherever this is the case, the lands bear evidence of the evil, by the obvious absence of the spirited and improved style of management which other parts of the county exhibit; buildings, fences, and roads are found neglected and disorderly. The crop of the present year may be cared for; but every outlay, the remuneration for which would only be received in future years, is avoided; and lands which grew rushes fifty years ago are growing rushes still. With the exception of church-lands, where all things conspire to their stationary sterility, estates held by annual occupancy partake least of the advance in agricultural improvements, make the worst returns to their owners, and contribute in the smallest degree to the welfare of the country. There are but two sources from which the outlay needful to effect extensive, or indeed any improvements, are to be derived—those of the landlord and of the tenant. If undertaken by the landlord, except in conjunction with the tenant, it requires little sagacity to anticipate the jobbing and waste, as well as the inefficient execution, which the absence of due vigilance and personal attention will engender; and if by the tenant, whether alone or aided by his landlord, it is obvious that he must be secured in his possession for such a term of years as will afford him the prospect, upon a fair calculation, of being remunerated for his expenditure, time, and attention. It may seem that I have dwelt at unnecessary length upon this head, but my apology is to be found in the importance which I attach to it, believing as I do that to the custom of letting land on long leases, more than to any other cause, though of course in conjunction with other causes, this county is indebted for its rapid improvement and high state of cultivation.

The size of farms in Glendaleward is various, but they are generally of considerable extent, ranging from 300 or 400 to 1000 or 1200 acres; and in cases where the tillage-land at the foot of the Cheviot-range is held in connexion with mountain-pasture, farms may be found to contain 2000 or 3000 acres. This is perhaps, of all others, the kind of occupation which possesses the greatest variety and interest, and is attended with the least risk. Upon strong lands, if the wheat crop should fail, or the prices be low, the farmer has little else to rely upon for his rent and expences, and therefore it is a bad year with him; but, in the case in question, the arable land is fertile, and the mountains supply sweet herbage and healthful pasture for sheep—the low grounds fatten the flocks which the high lands rear; and instead of depending either exclusively upon the sales of live stock or corn, the farmer is in possession of both, with a large parcel of wool of superior quality. In no county, perhaps, has the introduction and cultivation of turnips added in an equal degree to the produce of the land as in this; and in few, probably, are the alternate systems of grazing and tillage made to work together with greater advantage. In former times, a large portion of the pasture-land was preserved uneaten during a great part of the summer for the use of the sheep-flock in winter; which, with the aid of a little hay, was brought through in poor condition. To produce hay for this purpose, and for horned cattle and horses, occupied another portion of the grass-land, so that little stock, comparatively, could be kept; nor could it be fattened in the district, the practice being to sell the disposable stock in the autumn, to be driven into Yorkshire and other counties: but now that one-fifth of the tillage land is annually producing fine turnips, little hay is required for sheep; a far greater number of sheep is produced, and the district is capable of fattening in the winter a large portion of the stock that is reared. At the same time, the produce in corn, in consequence of the extra quantity of manure arising from a full stock of cattle, the superior state of the land from the high culture bestowed upon the turnip crops, and the richness imparted to it by consuming a large portion of them by sheep upon the land where they grow, has been increased in a degree almost incredible. It is difficult to obtain data to prove the real extent of this increase; but I happen to have one instance in point, for which I am indebted to my friend the present Mr. Culley, of Lowberry, upon which I can fully rely. The Messrs. Culley, of whom I have previously made mention, entered to the farm of Wark, which is situated on the southern banks of the Tweed, opposite to Coldstream, in May, 1786. The crop of that season, belonging to the preceding tenant, was valued over to them, as is common, at harvest, and was estimated at 15 bushels per acre for oats, and 9 for wheat. But the crop on the same farm, after being in Messrs. Culley's occupation for 15 years—some family arrangement having caused it to be valued—was estimated at 84 bushels per acre for oats, 62 for wheat, and 72 for barley; and it is reasonable to suppose that the increased value of the live stock and green crops on the farm would be somewhat in a similar proportion.* From this statement it appears that the great increase in the value of such lands arose much more from their improved cultivation than from the advance in the price of produce. The rent of this farm in 1786 was 800*l.*; it consisted of 1200 acres: it then rose to 1000*l.*; and in 1812 it was let for 3200*l.*, being just four times its rental in 1786. The estate of Pawson, in the same neighbourhood, which consists of good turnip-land and sheep-pasture, advanced within the same period from 560*l.* to 2140*l.* I have been obligingly favoured with the rental of estates of Earl Grey, some of which consist of fine turnip-soil and others of strong wheat-land, with a portion of grazing pasture. Seven farms of the former description produced, in the beginning of the present century, a rental of 5560*l.*; but, falling out of lease, were re-let for 12,057*l.*, the present rental, being an increase of 6497*l.*, or about 117 per cent. While six other farms, of strong land, under similar circumstances, advanced from 3925*l.* to 4642*l.*, giving an increase of 717*l.*, or 18 per cent.; which shows the great advantage of friable or turnip soils over retentive and clay-soils, though of good quality and favourably situated, as are those in question, being near the coast. I have not had an opportunity of ascertaining the rental of these estates in 1786, as of those previously quoted, but apprehend it would not exceed one-third of its present amount. Others of Lord Grey's farms, which partake of a medium quality between turnip and strong land, have experienced a medium advance.

If the system of furrow-tile draining and subsoil ploughing should have the effect, as in some instances it has been proved to have, of converting strong and retentive into turnip-land, what an immense increase of wealth to individuals, and of produce to the public, might be obtained! With this view a large manufactory for draining-tiles, on the Tweeddale patent, has been established on the last-mentioned property; and the noble owner has, with the prudence and liberality which have always characterised him as a landlord, instituted an extensive process of draining at his own cost, for which outlay the tenants pay interest. In stating the great advance of income produced by land, it is proper to remark, that it has by no means been realized by the owners in the degree which appears upon paper; for, on every one of the farms referred to, a large expenditure has been incurred by the landlord, in buildings and other improvements, in some instances to the amount of several thousand pounds. The buildings recently erected on two of Lord Grey's farms cost 10,000*l.*, besides all carriage of materials, which was done by the tenants.

The rotation of crops now almost universally practised on the turnip soils in Northumberland is,—

1st year after grass, oats.
2nd, turnips and a small quantity of potatoes.
3rd, spring wheat and barley.
4th, clover and other grasses.
5th, pasture.

And in some cases, where land is of inferior quality or in a high situation, and where the rearing and feeding of stock are considered more profitable than the frequent repetition of corn, the land is kept in grass for 3 years before being ploughed out. Tempted by the high price of corn during the French war, it was not unusual for farmers to break up the grass-land after one year's clover; but that was found to be, after a few courses, unprofitable, as the clover by frequent repetition was apt to fail, and the land lost that freshness which is so favourable to the growth of turnips, upon the success of which the produce of the entire course so much depends. The soil, as well as the climate of this district, is peculiarly favourable to pasture; and while land is *resting*, as it is called, in grass during an interval of two or three years between the repetition of corn-crops, it is not only acquiring a fitness for producing them, by the fresh state in which it comes out again—the want of which even an extra quantity of manure would not compensate—but it is in the mean time paying its way as sheep-pasture. This effect, however, is by no means universal, and therefore the practice cannot be recommended without having experience of its result upon the peculiar soil to which it may be applied; for, in some districts in the south of England, and especially perhaps on those where chalk and flint prevail, the second and third years' grasses would not only be poor and unproductive, but the land would be less calculated to grow good corn than if it had been only one year in grass, and folded with sheep.

The following will show the rental of two detached portions of the Greenwich Hospital's property, at intervals of 20 years, from 1735 to the present time. Spindleston, in Bambrough Ward, 550*l.*, 620*l.*, 885*l.*, 2077*l.*, 3838*l.*, 3250*l.* Scremerston, 3 miles south from Berwick, exclusive of minerals and fishing, 302*l.*, 467*l.*, 775*l.* 10s., 1560*l.*, 3405*l.*, 2912*l.* In 1735, and for long after, a considerable portion of this estate consisted of unreclaimed moor, and the highest rental here quoted was of short continuance, as some tenants failed, and others abandoned their engagements. The instance of the greatest reduction following a rapid rise of rent, that comes within my knowledge, is that of the farm of Grindon, which consists of 1480 acres: about one-third is good land, though rather wet; one-third tolerably good; and one-third very bad; but none of it very free turnip-soil, though made to grow turnips to a considerable extent. In 1786 the rent was 850*l.*, subject to tithes; in 1795, 900*l.*; in 1807, 2400*l.*; since which time it was reduced to 1600*l.*, and is now understood to be let at 1250*l.*; a proof that wet land is less in request than ever.

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* It ought to be observed, that this extraordinary crop was the produce of a favourable season, and of the best land in that district. From such information as I have been able to obtain, I should rate the produce of the Tweed-side lands, on an average of seasons, at from 28 to 36 bushels of wheat per acre; barley, 38 to 46; oats, 45 to 56. Mr. Thompson, of Scremerston, who is a very active and intelligent farmer, paying a rental of nearly 4000*l.*, gives it as his opinion that the average produce of the colder lands on the coast will not exceed 24 bushels for wheat, 30 for barley, 36 for oats, and 22 for beans. He also considers that the general produce of the district has increased from 20 to 30 per cent., upon lands let on leases of 21 years, since the year 1800. I am inclined to think that he states the average produce too low.

The lettings of other farms at different periods will show the fluctuation of rent; proving a rapid advance, though varying in degree according to the quality of the land and its previous state of improvement, and a subsequent decline.

	LETTINGS IN					
	1772-3.	1793-4.	1805.	1814-5.	1835 6.	1840-1.
	£.	£.	£.	£.	£.	£.
Newtown	450	750	..	1400	1150	1200
Turvelaws	340	550	..	960	830	900
Chillingham Barns—part of it clay	400	550	..	900	800	..
East Lilburn—turnip-loam	360	800	1600	1200 including	1050 corn tithe	..
Wooperton—turnip-loam	240	400	1200	800	800	..
Fenton Demesne—part wet and strong	350	500	..	600	600	..
Fenton Town Farm	450	800	..	1600	1050	1050
Doddington, South	..	750	..	1500	1200	..
Doddington, North	..	1200	..	2000	1500	..
Horton—turnip-loam	..	650	2000	1800	1715	..
Milfield; subject to all tithes	250	..	900	..	800	..

The Poland and Dutch oats were much grown on the best soils at the beginning of the present century, but are now almost entirely superseded by the potato and Hopeton varieties for the best lands, and the common Scotch and Angus for those of poorer quality and higher climate. The potato-oats produced in the district are said to be the best shown in the London market, frequently weighing 46lbs. per bushel, and sometimes more: they are very short and plump in the grain, and very bright in colour, if got in a good season. I remember to have sent a cargo of this description, of my own growing, to Mark Lane, several years ago, expecting to obtain a high price for seed, but the merchants would not buy them for that purpose, asserting that they had been *doctored*—by which they meant, as I was told, subjected to a clarifying process upon a hair-cloth with sulphur burning below; a trick which they might understand, but I had never till then heard of. Tartarian oats are grown partially on strong lands, but are not much in repute on the best soils, for, though productive, the grain is inferior and the straw coarse. Oats are commonly sown broadcast, on ridges of 15 feet wide: but, in some situations, where annual weeds prevail, they are sown in drills, and hoed. The season for sowing is in March and April; the quantity of seed varying, according to soil and grain, from 4 to 6 bushels per acre. They are reaped with the sickle, and tied up into sheaves immediately, as the best descriptions are liable to much waste, by shedding, if subject to be turned and handled.

The corn-crop succeeding the turnip fallow, and with which grass-seeds are shown, consists of spring-wheat and barley, in such proportions as the season and quality of the land render advisable. If one part of the turnip quarter be superior to another, attention is given to sow that first with turnips, so that it may be cleared at the earliest period for the wheat sowing; but if the quality of land does not materially differ, then it is desirable to alternate the crops, growing wheat this time where barley grew the last, and *vice versâ*. The season which is preferred for wheat sowing is the month of February, though it is often continued through the whole of March; and, when long-protracted snow-storms have prevented it, much has been, in some seasons, sown so late as the first week in April, and produced good crops. The kinds of wheat sown at this late period are much the same as in other districts are grown from autumn sowing—brown and white Kent, Burwell red, golden drop, Whitington, &c. &c. New varieties are often introduced under the attractive names of *nonsuch* and *prolific*, which on trial turn out nothing better, and probably not so good, as others that have been in common use, although, by help of a little puffing, they may serve for a time an individual purpose.

Spring sowing requires more seed than autumn, as the stems have less time to tiller. The quantity commonly used in broad-cast sowing is 3 bushels, in drills about 2 bushels, per acre. This practice, which answers so well on turnip-soils in the north, has not, I believe, generally succeeded in the south of England; probably because, though long retarded in the north, vegetation is quicker when it comes, and that the greater heat and dryness of the atmosphere in the south have a tendency to shrivel and ripen the grain before it has come to perfection. This circumstance may in some measure account for the inferior quality of the oats grown in the south of England to those produced in the northern counties and in Ireland. Wheat is invariably cut with the sickle or teethed-hook, and tied up immediately. The operations of harvest are very different here from the method of the southern counties. The Northumberland farmer is continually in terror of those shake-winds which the vicinity of his native mountains occasions, and must guard against the heavy rains which often succeed them. He cuts his corn several days before the farmer in Kent or Surrey would deem it fit, and instead of leaving it exposed on the ground for days afterwards, his object is to get it as fast as possible into a state for resisting rain, and for standing till it is safe to carry it into stack; the practice of housing it in barns being here unknown. For this purpose he applies all his force (50 or 100 reapers, as it may be) to one plot, and marshals them under his own eye, placing in regular order two or three upon each ridge, according to their width; the centre reaper twists or knots a band of corn, which is laid in the middle of the ridge, and filled as they proceed. A binder follows each party or band of six reapers, ties up the sheaves as tight as possible, setting eight or ten of them in a double row, close at top and wide at bottom, which done he covers those with two other sheaves, in form of the ridge of a house; this is called a "stook," and, when skilfully set, these are often found, after many days of stormy weather, to have sustained little injury. This mode of working precludes the possibility of cutting by the acre, so that most of the harvest-work is done by day's wages, and in part by bands from Ireland and the Highlands of Scotland, who visit the county in great numbers at that season. It is cut very low in the district in question, about 4 to 6 inches from the ground; but I cannot commend the farmers in the south end of the county for following this good example, whose slovenly habit in this respect tends to a great loss of manure. Three reapers should cut an acre per day, on an average; and the wages, without food, are, for men, from 18s. to 20s. per week, and for women 15s. In the case of the Scotch and Irish, they are supplied with food by the farmer, and with blankets in barns and outhouses, and receive 12s. or 14s. per week. When fit to be stacked the corn is carried home, and built into round ricks, of such size as the threshing-machine on the farm can manage in a day if worked by horses, or in half a day if driven by water or steam. These ricks are covered by a thatching of straw, previously drawn into bundles, and tied down by ropes made of twisted straw, and laid regularly over, meeting at top, diverging towards the eaves and fastened to a belt-rope, which is first of all tied round the stack. This forms the constant occupation of the men when a dewy morning or a shower renders the corn unfit for stacking; and the ropes are either made at such times, or prepared previously by old and infirm men, capable of doing little else, with each a boy twisting the straw with his throwcrook as it is passed in regular thickness through their hands. Such a minute description of so simple an operation, generally performed at times when other work is impeded, may seem ridiculous to those to whom it is familiar; but I am induced to notice it because it answers all the purpose of the more nice, but infinitely more expensive, covering invariably applied in the southern counties, which is reserved for particular hands, as requiring a degree of skill and ability beyond the reach of the ordinary labourers on the farm.

The portion of land, after turnips, not sown with wheat, is occupied by barley, unless in cases where it is of a moorish or clayey nature, when oats are preferred. The Chevalier kind is sown on the best lands, and the common Scotch barley where the land is inferior or the time of sowing very late, as the latter ripens about ten days earlier. Land which has been well cultivated for turnips is frequently in tilth sufficiently fine to admit of being sown after once ploughing into ridges, in which case it is frequently drilled or ribbed by means of one-horse ploughs which are used for clearing turnip-drills, and then sown by the hand, the seed falling into the ribs or furrows made by the little ploughs 8 or 9 inches apart, and then being regularly covered by harrowing. This process is more expensive than the use of a drill-machine, but it works the land better, and, as far as the crop is concerned, I am inclined to think is preferable, inasmuch as the roots are not confined in so small a space as when deposited by the drill, and are apt to shoot more vigorously; although for hoeing, if weeds prevail, the closer row from the machine is better. If any stiffness or want of friability appears in the land, it ought to have more than one ploughing for barley and grass-seeds. The time of sowing is from the middle of March to the middle of May, as the land can be got ready and the weather may be suitable: early sowing is not desirable, as the corn while tender is apt to get a check by frost, and I should say that in an average of seasons, the best crops of barley are from land sown from the middle to the end of April. Harvest commonly begins in August, but is seldom concluded till late in September, and in some seasons much remains to be done in October. Barley, especially that which is early ripe, is more frequently mown, either with the cradle-scythe, or the short scythe, or double-handed sickle, than any other grain; but if the weather be fickle and the season advanced, the farmer is generally anxious to have it tied into compact sheaves, for although it may be tied up directly from the scythe, it does not pack so tightly together from the swathe as the sickle. The produce of the district far exceeds its consumption, and much of the surplus is shipped from the port of Berwick.

Turnip cultivation is the branch of rural economy in which this district peculiarly excels, which exercises by far the greatest influence upon its prosperity, and has produced the greatest effect, as I have previously stated, upon the value of the land and the well-doing of all who possess and are connected with it. The process of preparing land for turnip sowing is so nearly the same in all districts as scarcely to require notice: when lime is applied, it is frequently spread upon the stubble soon after harvest and ploughed lightly in, which ploughing is succeeded by a deeper one in a contrary direction, by which the lime is intimately mixed with the soil without being placed too deep to which it has a tendency; by applying it at this season, less work is left to be done in spring when it is of more importance, and the risk of injuring the growth of the plants, which sometimes follows the application of quicklime in a dry season immediately before sowing, is avoided. The land is stirred in the spring with more or less frequency, according as its natural friability or adhesiveness renders it necessary, the object being to clear it of couch and weeds by picking them off after each process of ploughing and harrowing, or rolling and scarifying, and to keep it in a state of the finest pulverization possible. Swedish turnips are commonly sown in the latter part of May (although as good a crop as I ever saw was sown on the 15th June), and white turnips through all the month of June. The proportion of seed to white turnips varies from ¼ to ½, according to the quality of soil and supply of manure: a good crop of Swedes is much more valuable than an equally good crop of white turnips, but better land and more dung are required to produce it; and inferior land will produce a tolerable crop of white, which would not bring forth Swede turnips at all. The selection of the kinds most suitable to soil and situation is matter for the exercise of individual judgment in every distinct case. Turnip culture is like gardening upon a large scale; the land ought to be in such a state of pulverization for the reception of so small a seed and of the manure, as to fall from the plough like meal. Every operation connected with it requires great nicety, and where so much work as the sowing of 100 acres or more upon a farm is to be done in so short a period, men and cattle are stimulated to the utmost pitch of energy and activity. The process, when conducted on a large scale, presents a scene of uncommon animation and interest, and might afford to Adam Smith himself an apt illustration of the advantage of the division of labour. The occupier of a small farm, with force in proportion, cannot avail himself of this advantage; the various operations must be performed with the same men and horses; much time is lost in the frequent changes from plough to cart and back again during the day: land and manure are exposed injuriously to the sun, and the work at once expensively and inefficiently performed; but the farmer whose force is adequate to conduct the whole process at once, makes his arrangements so that no part of it can stand still or is required to wait for another. So many ploughs are set first to make the drills or ridges, which they continue at throughout the day: so many men are set to fill the carts at the dungheap, which has been previously made in such a situation as to give the easiest access, and to be conveyed by carts with one horse in each, to the drills; these carts are driven by boys (the empty ones often at a trot) between the heap and the man who is appointed to unload them, which he does by setting up the cart to a certain degree by means of an upright slip of iron in front, which slides into another with notches, to go higher or lower as required; this adjusted, he puts his horse in motion, and with a hack like a fork with prongs turned down, he draws out the dung which falls into the centre drill of the three which the cart occupies, and never stops from a quick walk until the whole is emptied out. To do this with regularity, and at times to give a little extra manure to a part of the ground which stands more in need, requires great activity as well as judgment, and is a task allotted to one of the most able and judicious among the men. So soon as he has emptied his cart another is at hand for him, and thus he keeps on without intermission through the day. The manure thus laid in the centre drill is divided equally among the three, by a person who follows with a three-pronged fork, and is again spread carefully along the hollow of each drill by women, who, each taking one, go on at good speed. Following close upon their heels is another set of ploughs reversing the drills and covering up the smoking dung; after them comes the sowing-machine, which finishes off two drills at once, having a roller in front to smooth and compress them—the funnels to deposit the seed in the centre of them an inch or two above the dung, and a light roller following the funnels. This machine is drawn by one horse and guided by a man walking behind, who attends to supplying the canisters with seed, and to clear away obstructions, driving the horse by reins. This man concludes the operation of sowing, and does not leave the field till he has finished the last drill; and thus a plot, which in the morning presented a flat and uninteresting surface, has before evening been twice turned over by the plough, had a quantity of manure applied to it, no particle of which is now visible, and is laid in rows equal in size, and of undeviating straightness. In this way from 8 to 12 acres are done in a day, according to circumstances; and if bone manure is employed without dung, and sown from the drill-machine in common use, which does three rows at once, the operation goes on still more rapidly; and in this case the drill-ridges are not set up so high, that the bones may not be deposited at too great a depth below the seed; in some cases the seed and bones are sown together; but I believe it is better that the plants should have a little soil to go through before reaching the bones; and for one reason among others, that the bone dust is less apt to be drawn to the surface and lost to the turnips in hoeing them. Swede turnips with dung are sown upon drills of the width of 27 inches from centre to centre; and white turnips on drills from 28 to 30 inches: with bone-manure, and for spring food, a width of 26 inches is sufficient. The quantity of seed used is 2lbs. of white and 3lbs. of Swedish per acre. For the purpose of clearing and working the land effectually between the rows, it is of great importance that room enough be given for the action of the small plough and scuffler, and that the drills be perfectly staight. In a district where such a breadth of turnips is cultivated, and which affords but few populous villages and towns to supply extra labourers, it is necessary that as much of this kind of work as possible be done by horse-hoeing, leaving to manual operation only the thinning of the plants and removing weeds from the top of the drill. The latter is light work, and is performed with great quickness and dexterity by young women and boys who strike the hoe through the young plants in a way which, to a stranger to the process, conveys the idea of utter destruction, but is found to leave a sufficient number, and those the strongest, at very regular intervals. To give room for a full crop, where land and other circumstances are favourable, Swede turnip should be allowed an interval of 8 inches between the plants in the row; and white turnips from 10 to 12, although on poor land, with late sowing, inferior manure, and for spring food, it will be prudent to leave them much closer. A large weight cannot be produced but from large bulbs. A moment's consideration will show that the last inch in the diameter of a large turnip will of itself be equal to several small ones; even in this, however, a medium is to be observed, for very large turnips, if not consumed early, do not stand long, and are inferior in nutritious quality. It would not be safe to state the average produce of the district at more than 25 tons for Swedes and 28 for white turnips, when cleared of top and root—although 40 tons have been grown, and 35 are not uncommon—but such large weights are only produced by an extra quantity of dung, which endangers the succeeding crop of corn by lodging, and consequently the grass-seeds along with it: of the latter, the kind which produces the largest bulk is the tankard, but from its shape and size it is so much above the ground, that it is injured by the earliest frost, and it is therefore advisable to sow it only on such land, and in such quantity as is intended to be fed off by Christmas at latest. Next to it is the globe turnip, which, if the seed be raised from well-selected plants, preserves a good shape and nutritious quality. Several varieties of the Swedish kind and also of hybrids are cultivated, each probably possessing properties which render them applicable to peculiar situations, but which it is unnecessary here to treat of in detail. The first operation upon turnip-drills, so soon as the plants are of sufficient size to bear it, is to take the soil from the side of the drill with the small single-horse plough, by going along one side and returning on the other, which cuts down also any weeds that may have sprung up, and lays them in the hollow of the drill; the plants are then thinned and the top of the drill cleaned of weeds, which are also drawn into the hollow by hand-hoeing. Where bone-dust has been used, it is recommended rather to thin the plants by pulling than by striking the hoe through them, as in that way less of the bone-manure is drawn off from the roots of the turnips. After ten or twelve days, when the weeds have had time to wither and the plants have recovered their upright position, a suffler is run along between the rows, stirring the soil which the little plough had laid there, and shaking the weeds with which it is mixed; the turnips are again hand-hoed; and after a while, unless a tendency to weeds renders another hoeing necessary, in which case the scuffler may be again applied also, a double mould-board plough is run along, laying the soil back against the sides of the drill, but not so high as at all to cover up the bulb, which would prevent the growth of the turnip. This is the finishing process, previous to which the little plough and scuffler will have been more or less frequently employed, as the tendency to weeds, or an unkindly state of the land from heavy rains or other causes, may render advisable. There is, however, great truth in the common saying, "that the more the irons are among the turnips, until the leaves begin to spread across the intervals between the rows, the better;" even if there are no weeds to overcome, the turning back and forward of the soil, and the free admission of air, have a great effect in promoting the health and growth of the plants. Having brought the crop of turnips to this stage, it now remains to state the manner in which they are used, and the means employed for preserving them from frost. The character of the district in question, the dry and early quality of the land, and the alternate system of husbandry, and the general absence of old grazing pastures, render it much more calculated for the production of sheep than of cattle; in consequence of which no more of the latter are kept than are necessary to convert the straw into manure, which is done by feeding them in fold-yards with turnips in the winter: by far the larger proportion of the turnips are in consequence consumed in the fields by sheep. As it is essentially a breeding district, every farm has its flock of ewes: these go over all the pastures in the autumn and winter, and, except in times of snow, rarely get turnips till within five or six weeks of lambing, but receive them from that time until the spring of grass renders them unnecessary. Turnips are laid out to ewes in the grass-fields in certain quantities each day, but by no means so many as they would consume if put upon the ground, as it is considered to be more safe that they should not be too fat at lambing, and that they should have grass along with turnips. The hogs and fatting-sheep of the previous year, now $1\frac{1}{2}$ year old, which have not already gone to market, are put upon turnips in October, or whenever the pastures cease to improve their condition. The turnips required for cattle and for the ewe flock are drawn off in alternate rates in the proportion of $\frac{1}{4}$, $\frac{1}{3}$, or $\frac{1}{2}$, as the convenience of the situation, the goodness of the crop, or the quality of the land may dictate; the remainder are then consumed on the ground by the other sheep, which are confined by nets, supported by and twisted round stakes, at intervals of three or four yards, which is the only folding that is applied to land in this county. As the fields are large, and much of this kind of moveable fencing is required in consuming turnips, nets are preferable to hurdles, from being so much more portable, that the shepherd can at any time, with no assistance but that of his dog to keep back the sheep meanwhile, take in a fresh supply of food. A net of fifty yards long, with strong cord at top and bottom to twist round the stakes, costs 10s. or 11s. At the beginning of the season, and while turnips may yet be growing, such as are wanted in the fold-yards are carted as required from the field; but the habit of going to the field day by day throughout the winter, at one time injuring the land by carting up to the axles; at another, wasting labour and turnips by pulling them in frost, or digging them from beneath snow, and generally bringing them, at great waste and expense, in a very uncomfortable state to the cattle, is almost entirely laid aside. Having determined on the quantity of turnips to be drawn, and the situation most convenient for storing them, whether near the fold-yards or near some road of easy communication with them, the farmer takes a good day and applies sufficient force to the work—some hands to pull and clean the turnips, some to fill the carts, boys to drive quickly between, and men to unload and deposit them; and by judicious arrangement and active proceeding, he gets a greater quantity moved in the course of one day, in cleaner condition and without injury to his land, by carting over it when wet, than could have been done at double the cost by any other process. The modes of storing turnips are various, according to the uses for which they are intended. To fatten cattle in yards the best will be taken: it is usual to keep such cattle on white turnips till about the end of the year, and afterwards to give them Swedes; in either case the tops and roots are taken off the turnips when pulled, taking care not to cut into the bulb, as wounding it so promotes decay. The tops are spread out for the sheep, if they be following over the ground, or carted to young cattle in the straw-yards. The turnips are laid in some dry and convenient situation upon the ground, in long heaps, which are rounded at top and covered with straw, which admits the air but excludes the frost: if covered with earth, or even laid in a close house which prevents evaporation, they will quickly rot; but under straw, Swedes will retain their qualities and continue good food for cattle through all the month of May. This covering is cheaply done, by using the same straw and ropes which have covered the stacks that may have been threshed; the ropes, broken into right lengths, need only be thrown over the turnip-heaps from side to side, and fastened down at the ends by laying a spading of earth upon them, like a little ditch round the heap. For preserving turnips in a juicy and fresh state till late in the spring, the plan is sometimes followed of taking them to a field ploughed for fallow in the next summer; a furrow is made by the plough, which furrow is planted full of turnips; another furrow is laid over them, and the hollow filled with turnips again, and so on.

This mode, though it preserves the turnips in a sound state, has its inconveniences; they cannot be got out if wanted in frost, and are rather expensive to take up at any time; and the tops shoot out early in spring so as to draw the juice from the bulbs, making them less nutritious for cattle than if laid up in heaps without tops, although for ewes when at, or near lambing, they are more wholesome, as a little fresh top corrects the too astringent quality of the Swedish turnips, and promotes milk more; at the same time that, in a scarce season, an extra quantity of food is obtained: they do very well, too, for young cattle fed on straw. A very common mode of storing turnips for such young cattle, or for sheep in grass-fields, is to place them with roots and tops on, close side by side upon a piece of dry ploughed land, or even rough grass, if it be more convenient; the roots put out fibres which keep the turnips in sap, and the tops are sufficiently close to cover them tolerably well from frost, with this advantage, that a slight shower of snow protects them, which would be of no service to them standing singly on the drills. In this way they can be placed conveniently for the ground on which they are to be used, so as to be accessible even in deep snow, and can be filled into carts with grapes or three-pronged forks in clean and dry condition. I have dwelt at such length on this part of the subject, because it is important in itself, and is proved to be considered so by the Society, from their having offered a premium for the best essay respecting it. It remains, however, for me to describe another mode of preserving turnips, those left on the land for sheep-feeding, and having naturally no protection but their leaves, which a few days of frost, without snow, will destroy. I am not prepared to say that it is in common practice in Northumberland, or so much so as it deserves, probably because it is attended with a good deal of labour; but I have myself used it, when I was a large grower of turnips, with much success, and in one season especially, when a hard frost, without snow, in the end of January, destroyed nearly all the white turnips in the district, and they rose in price from 4d. and 5d. to 9d. and 10d. per week for sheep, I had by this precaution 60 acres of fresh and sound turnips standing in the spring. When the turnips have ceased to grow, and those intended to be stored up are removed, and the headlands cleared, a double mould-board plough, with two horses abreast, is set to work; the horses walk in the outside drills of three, leaving the centre one for the plough, which is set to such depth as to raise the soil so as entirely to cover up the turnips on each side, just leaving the tops above ground. The work is heavy, but the effect certain, unless the turnips be unusally large; in which case it is impossible entirely to protect them. The only inconvenience attending the eating of the turnips is, that as the sheep can only get the tops, so soon as they have taken them off, as many turnips must be drawn out by the picker from day to day as the flock requires; and from the hollowness of the drills, the sheep have more difficulty in getting up if they *lay awkward*, as the phrase is.

Such farmers in the district as have more turnips than they require, find a ready sale for them to the stock farmers in the mountain-range, selling them to be consumed on the ground by sheep from 5*l*. to 7*l*. per acre for white, and probably from 8*l*. to 10*l*. for Swedes; or for 3d. to 4d. per week for hogs, and 6d. or more for aged sheep. Sheep are generally made fat for market in this county with no other food than turnips; and in like manner three year old steers are sent to market in the spring, of good weight—say from 60 to 80 stones of 14lbs.—which have tasted neither oil-cake, corn, nor hay; although many people now use cake or meal for the improvement of the manure, and that they may send off two lots of fat cattle in the season instead of one. The superior feeding quality of the turnips in this and the counties north of the Tweed has excited the surprise of agriculturists from Cambridge and other counties where good turnips are produced, but which they say will not bring stock to maturity without adventitious aid. This may arise from a combination of causes—the greater friability and loaminess of the soil, the larger size of the turnips and their more solid texture, from the greater moisture in general of the climate. They are certainly less subject to the ravages of the fly at the outset, and of mildew afterwards; for though frequently attacked by the fly, they are seldom overcome by it. Their success in this respect may be mainly ascribed to the vigour with which the plants generally come up in consequence of the mode of cultivation; pains are taken to have the manure in a proper stage of fermentation, so that it may be spread smoking in the drills and covered up immediately—a process (that of fermentation) which it is better should go on under the surface than above it, although in a crop like turnips, where the object is to produce an immediate effect, nothing being of so much importance to its success as a rapid and unchecked growth in the first stage, a more advanced stage of decomposition is necessary than in the case of wheat and crops which continue for many months to draw their nourishment from the soil and the manure incorporated with it. The Northumberland farmer places his manure, of whatever kind, in the situation where the plants must at once strike into it, and is the more delighted the greater difficulty he experiences in keeping up with hoeing them; while the mode of sowing, much used in the midland counties, upon a flat surface with a large portion of the dung drawn to the top and left to the influence of the sun and wind, fills him with astonishment.

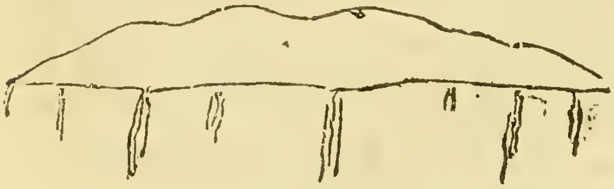
(To be continued.)

ON DRAINING.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—One of the most important questions that can engage the attention of the agriculturist of the present day is draining. Its direct advantages are well known—its indirect ones are also not a few. It adds to the salubrity of the atmosphere, and in very wet districts probably improves the climate, both for animal life and for vegetation. I am even so sanguine as to suppose that there is enough of stagnant water in some districts, if properly carried off, to improve the navigation of their rivers. I would instance Dumfries-shire, where immense tracts of moss and swamp are probably sufficient reservoirs to deepen and clear the mouths of the Annan and Nith, instead of diffusing (as now) pestilential vapours along their vallies. With this preface, I beg to offer you a few remarks on the subject of draining land, at the same time candidly acknowledging that my practical experience is not great—that my ideas are derived rather from observing the practice of others, than from any doings of my own—in short, I have passed some time among agricultural operations, and have kept my eyes and ears open; but if any of your readers suppose that to be an insufficient qualification to entitle me to offer an opinion on the subject, they may step over my letter at once.

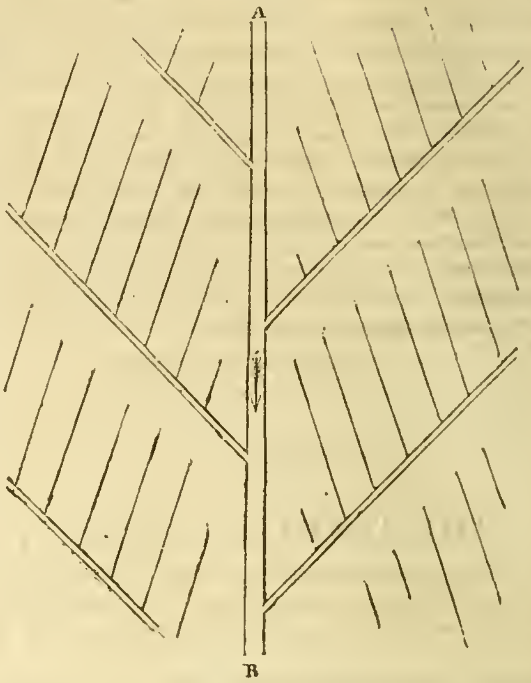
One of the first practical questions on this subject that demands our attention is *the direction of the drains*. Some months ago, your paper contained a discussion between Mr. Wreford, of Kent, and "A Farmer North of the Tweed," on the question whether the drains should be cut across the field or up-and-down. This appeared, from their view of it, to depend on the manner in which water oozes from the subsoil. The one correspondent maintains that it percolates in nearly horizontal lines from corresponding strata beneath the surface; and the other, that it makes its appearance in lines or stripes in a direction *down* the slope of the land. Both, in my view, are right as to the facts of the case, and both wrong as to the practical inference. This may appear paradoxical, but I hope to establish the opinion by satisfactory reasons. When a surgeon wants information regarding the structure of the human body, he dissects. We cannot so easily do this with the earth; but nature dissects for us, leaving us, if we choose, to observe. The subsoil most frequently requiring draining is probably a stiff till. Observe, then, when a water-course cuts through a subsoil of this kind, leaving a bare precipitous bank, and observe it particularly in rainy weather, the water certainly does appear in horizontal strata, according to the principle of the "Farmer North of the Tweed;" but then only at particular points in the horizontal line, and not equally along the whole of it, as in the annexed diagram, thus confirming the apparently opposite opinion of Mr. Wreford. In a rocky or chalk subsoil, the process is exactly the same. But, in my opinion, this is not the main point in the question. The drains—especially the smaller branches, or feeders—must have, if possible, a good run. The main drains will make a run for themselves with a declivity comparatively small — especially where tiles are used—while, with the same declivity, more minute quantities of water will scarcely flow. Unless the land is very steep, therefore, a sufficient inclination cannot be obtained by cross drains.



Another essential point, which appears to have been hitherto almost overlooked, is to obtain a *nearly equal inclination* in each drain, from its commencement to its termination—to have, at least, no *sudden changes* of declivity. When water flows for some time with a considerable fall, and then takes a more level course, it has always a tendency to deposit a sediment in the lower part, and to choke the drain, although the inclination may still be such that there would otherwise have been no deposition whatever. When the velocity of the water is greater, it will keep heavier particles of mud in suspension than at a less velocity: every velocity has its own degree of fineness in the particles which it floats. Hence, whenever the water of a rapid stream loses its force, there it deposits mud, sand, or gravel. This we may see in the eddies and still parts of every stream, and at the mouths of all our rivers.

For the same reason I object to sudden bends in the drains, such as the right angles that we often see where the feeders enter the main drain. The stoppage of the water from the sudden turn, and still more from encountering a stronger cross current, produces a stagnation and a deposit both in the mouth of the feeder and below the junction. Of course I speak of those cases in which the drains have a sufficiency of water to produce a considerable run in the most rainy weather.

Combining, then, all these considerations, I should proceed as follows:—In the first place, suppose we have a considerable tract of land, with very little declivity and with an even surface, such as in marshes, peat-mosses, &c.; I would drain it nearly as in the accompanying sketch, or on the same principles—due allowance, of course, being made for local circumstances. *A B* is an open drain or ditch in the direction of the slope of the ground—that is, with the greatest possible fall. The double lines branching from it are the main covered drains, the single lines being the feeders. In this way we obtain very nearly the greatest possible declivity, both for the main drains and for the feeders, and we have no right angles. It is, I believe, considered best to have all the feeders emptying themselves into the covered drains, so as to have as few outlets as possible into the open drain.



In a field having a greater slope, I would cut all the drains neither across nor up-and-down, but diagonally, more or less approaching the cross direction, as the face of the field is more or less steep. I would allow the branches to wind according to the irregularities of the surface, so as to effect a somewhat uniform fall, regarding the perfect parallelism of the drains as quite immaterial: they might vary in their distance, according to circumstances. Nature is the grand drainer of a country: I would, in this respect, imitate her system as we see it in the ramifications of every river.

One reason why the up-and-down system is so much preferred by some to the cross direction, may be, that since the former plan was introduced, the drains have been cut much closer together, or the fields even re-drained. One of your correspondents, for instance, mentions a field which he first drained on the cross system with little success, but afterwards with complete success on the up-and-down system, somewhat in the same way as a second course at table is more satisfying than the first.

Having thus discussed a few *practical* questions, I would ask leave, if I have not already encroached too far on your space, to offer a theoretical one. What is the use of draining at all—or rather, how does the water injure the crop? Wheat will grow, ripen, and yield good grain, in water alone—in a bottle, for instance. We often see the greenest grass in the furrows, below springs, beside shallow water-courses, and on irrigated ground. I know that the wetness of the soil prevents it from being worked properly; but this is evidently not all, for this would not apply to pasture land, and although a continuance of dry weather enabled ground usually wet to be ploughed and the grain to be sown altogether satisfactorily, subsequent rains would, I apprehend, still show the inferiority of the undrained land. Some say that, although running water may be beneficial, stagnant water is injurious. This is answered by the gardeners, who prefer watering the young plants with stagnant water; and also by the case of wheat growing in a bottle of water, as just mentioned. Will any of your correspondents, then, inform me in what manner wet land injures the crop?

Permit me, in conclusion, to ask another question: Are common earth-worms injurious, or otherwise? Several points depend upon this.

I am, Sir, respectfully,
An Observer.

THE TIMBER DUTIES.

We submit to our readers the following remarks on the Timber Duties, written (before the budget was brought forward) by one of the ablest statesmen in the country.

The following are the different rates of duty imposed on fir timber on importation from foreign countries, since the duties were first levied by Mr. Pitt's Customs Consolidation Act, 1787:—

	The Load. £	s.	d.
1787, 27 Geo. 3, cap. 13, (Mr. Pitt's Consolidation Act)	0	6	8
1795, 35 Geo. 3, cap. 20	0	10	0
1796, 37 .... 15	0	10	6
1797, 37 .... 110	0	11	0
1801, 41 .... 28	0	14	8
1802, 42 .... 43	0	16	10
1803, 43 .... 68	1	0	0
1803, 43 .... 70	1	2	6
1804, 43 .... 53	1	5	0
1806, 46 .... 42	1	6	8
1809, 49 .... 98	1	7	4
1810, 50 .. . 77	2	14	8
1813, 53 .... 33	3	4	11
1819, 59 .... 52	3	5	0
1821, 1 and 2 Geo. 4, cap. 37	2	15	0

Comparative view of the present differential duties on the principal article of wood, when imported from a British possession and from a foreign country:—

	Foreign. £	s.	d.	British Possession. £	s.	d.	Differential duty per cent.
Battens, per 120 ..	10	0	0	1	0	0	1,000
Deals, ditto	22	0	0	2	0	0	1,000
Lath wood, pr. fath.	4	5	0	0	15	0	566⅔
Masts, 12 inches and upwards, each ..	2	15	0	0	10	0	550
Staves, average duty per 120	3	0	0	0	6	0	1,000
Oak planks, per ld.	4	0	0	0	15	0	533⅔
Fir timber, ditto ..	2	15	0	0	10	0	550
Wainscot logs	3	15	0	0	12	0	625
Unenumerated timb.	1	8	0	0	5	0	560

Lord Althorp, on bringing forward the budget, on the 11th of February, 1831, proposed lowering the duty on Baltic timber from 55s. to 50s. per load, and raising the duty on colonial timber to 20s. His lordship estimated that it would increase the revenue 600,000*l.* This was a moderate calculation, but owing to the opposition which arose, his lordship moved the following resolution on the 18th of March, 1831, viz.:—"That it is the opinion of this committee that in lieu of the duty of customs heretofore payable, there shall be taken and received the following:—On all timber, being 8 inches square, imported from any port in the Baltic, on and after the 1st January, 1832, there shall be payable, per load, a duty of 49s.; after the 1st of January, 1833, a duty of 43s.; and after the 1st of January, 1834, a duty of 40s." This resolution was lost by a majority of 46.

The select committee of the House of Commons, appointed to take into consideration the duties on timber, agreed, in August, 1835, to the following resolutions:—

"That it is the opinion of this committee that the present mode of taking the duties on deals is susceptible of improvement; and that this committee would recommend that a mode be adopted which shall approach more nearly to a payment, according to the contents of the deals.

"That it is the opinion of this committee, that the difference of duty of 45s., now imposed by law upon timber, the produce of Europe, as compared with timber, the produce of North American colonies, is too great, and may be reduced.

"That it is the opinion of this committee, that having a due regard to the interests which have been created in the British North American colonies, by the system hitherto pursued, and to the representations of the shipping interest, a reduction of the protective duty, not exceeding 15s. per load, appears to them to be a fair arrangement.

"That it is the opinion of this committee that such reduction be made, so far as may be consistent with the interests of the revenue, without any augmentation of duty on colonial timber.

"That it is the opinion of this committee that in any alteration made, such alterations should not affect the shipments made in the year 1836.

"That it is the opinion of this committee that there should be an uniform mode of taking the duty on deals throughout the united kingdom."

The proportions between the duties in the present scale and the values of deals and battens are very unequal. The duty on 120 deals, of from 8 to 20 feet in length, was increased from 2*l.* 13s. in 1787 to 5*l.* 16s. 9d. in 1801; to 17*l.* 10s. in 1810; to 20*l.* 15s. 8d. in 1813; and in 1821, the present rates of 19*l.* and 22*l.* were established.

If the duty upon colonial fir timber was left as it now stands, and if 5s. a load annually were taken off the duty on foreign fir timber, until it was brought down to 30s., then the colonies could not have the smallest ground of complaint, especially if such reduction did not commence until one year after the passing of an act of Parliament to that effect.

In respect to deals and battens, importers from the colonies, as well as from foreign countries, must find it equally their interest to have the duties levied by cubic measurement instead of by the 120 deals or battens.

The waste of timber, in order to cut the trees to the tabular lengths in the present tariff, is enormously destructive.

Now, as it is clear that an uniform duty upon deals would be equally protective to the importer from the colonies, and equally productive to the revenue, there can be no reasonable ground for the change; while the table of duties will be simplified by substituting one scale, as recommended by the committee of 1835, in place of the complicated rates now existing in the tariff.

Other simplifications might be made with equal convenience in regard to staves, &c.

The present duties on mahogany are as follow, viz.:

The ton of 40 cubic feet	£5	0	0
Imported from the Bay of Honduras, do.	1	10	0
Imported from British Possessions, do.	4	0	0

But the duty on furniture made of mahogany in foreign countries, being reduced to 20 per cent., and the demand which there would be for mahogany for ship building, if the duties were reduced, demand that the duty on *foreign mahogany* imported for use in the United Kingdom should be reduced to about 20s. per ton of 40 cubic feet; *from the British Possessions*, including the Bay of Honduras, 10s.

WHEAT IMPORTED—(1760 to 1840 Inclusive).

An Account of the Quantities of Wheat and Wheat-Flour, in Quarters, entered for Home Consumption in Great Britain in each Year, from 1760 to 1840; and stating the Annual Average of each consecutive Period of Ten Years.

YEARS.	Quantities of Foreign and Colonial Wheat and Wheat Flour entered for Home Consumption in Great Britain.	
	Quantity in each Year.	Annual Average of each Consecutive Period of Ten Years.
	Quarters.	Quarters.
1761	—	
1762	—	
1763	71	
1764	1	
1765	97,175	
1766	11,020	
1767	497,328	
1768	332,114	
1769	3,155	
1770	23	94,089
1771	1,449	
1772	20,777	
1773	53,950	
1774	283,969	
1775	465,848	
1776	—	
1777	212,150	
1778	75,574	
1779	—	
1780	—	111,372
1781	116,793	
1782	64,836	
1783	565,026	
1784	201,405	
1785	80,699	
1786	29,430	
1787	48,642	
1788	102,148	
1789	41,141	
1790	182,805	143,292
1791	421,038	
1792	—	
1793	431,679	
1794	220,249	
1795	297,416	
1796	878,165	
1797	403,037	
1798	356,694	
1799	438,152	
1800	1,256,989	470,342
1801	1,417,360	
1802	407,438	
1803	257,310	
1804	359,139	
1805	780,535	
1806	197,475	
1807	356,031	
1808	23,602	
1809	385,804	
1810	1,374,897	555,959
1811	116,385	
1812	112,952	
1813	319,466	
1814	623,086	
1815	116.382	
1816	225,263	
1817	1,024,443	
1818	1,596,511	
1819	122,000	
1820	34,275	429,076
1821	9	
1822	2	
1823	12,137	
1824	15,778	
1825	525,231	
1826	315,892	
1827	572,705	
1828	841,828	
1829	1,363,487	
1830	1,700,548	534,762
1831	1,487,807	
1832	375,788	
1833	83,691	
1834	64,552	
1835	27,525	
1836	30 096	
1837	242,594	
1838	1,821,151	
1839	2,652,553	
1840	2,295,419	908,118

WILLIAM IRVING,
Inspector-General of Imports and Exports.
Inspector-General's Office, Custom House,
London, 11th June, 1841.

THE NATURALIST'S LIBRARY.

Vol. XII. Conducted by Sir W. Jardine; the present volume by Lieut.-Col. C. H. Smith.—Edin. 1841.

The present volume of this interesting work continues the history of the "Mammalia," and comprehends the description of "horses," or "*Equidæ*," the genus "*Equus*" of authors, including two species, the "horse" and the "ass," with the "zebra" and their congeners. The title-page is embellished with a handsome vignette, or group of various animals, and a portrait of Gesner, the oldest and most original of our natural historians, and deservedly placed among the fathers of the science. The introduction is unusually long, but contains much curious matter on the first locality of the horse, and the domestication of the animal, derived from comparing the analogies of different languages in the name of the horse; and arrives at the generally acknowledged conclusion, that, in the steppes or tablelands of high or central Asia, about the fortieth degree of latitude, the original habitation of the horse is found, whence they spread over the surrounding countries, as they were carried along in the expeditions of the nomad tribes, which seem to have taken place at different periods long anterior to the records of history. The great improvement by judicious mixture of breeds, is dated from the time of the Saracen conquests, as these events showed the great value of the animal.

Thirty-one plates accompany the descriptions of the different animals; those of the four primeval or original colours being the truest specimens of uncultivated nature that we recollect to have come under our observation. The native wild horses of Asia, and the feral horses of America, are very minutely described, and their origin and difference deduced from the evidence of the best-informed travellers. The breeds of domestic horses are described at considerable length: much industry and research have been bestowed on the Arabian and eastern breeds, from which all our finer racers are descended. Among the farthest eastern breeds, the description of the "piebald" is very interesting.

The asinine group are very largely described, and also the "hippotigrine" animals, as the zebra and the quagga. There appear in the plates, a hybrid between an ass and the zebra, and between a brood mare and the quagga. The different properties of the common mule and the binny, or the produce of an entire horse and the she-ass, are distinctly pointed out; and it is concluded, from very general and extensive observations, that no mules yet obtained from the race of "equidæ," possess the ability or desire of further propagation.

In the genus "*Equus*," the "*Equus Hippargus*," or "*Koomrah*" of Africa, is ranked as a distinct species. This animal, though known to the ancients, has been much misunderstood and confounded with the binny, though the latter is a scarce result of domestication, and the first is a wild animal. One living specimen has been seen in England, which came from Barbary, and the skin of another has been preserved, which died on the passage at sea. We give the description by the author:—"The koomrah of the mountains is about ten, or ten-and-a-half hands high; the head broad across the forehead, and deep-measured to the jowl; is small, short and pointed at the muzzle, making the profile almost triangular. Instead of a forelock between the ears, down to the eyes the hair is long and woolly; the eyes are small, of a light hazel colour, and the ears large and wide; the neck thin, forming an angle with the head, and clad with a scanty but long black mane; the shoulder rather vertical and meagre, with withers low, but the croup high and broad; the barrel large, thighs cat-hammed, and the limbs clean, but asinine, with the hoofs elongated; short pasterns, small callosities on the hind legs, and the tail clothed with short fur for several inches before the long black hair begins. The animal is entirely of a reddish bay colour, without streak or mark on the spine, or any white about the limbs. This sketch was made from a living specimen belonging to the late Lord Grenville, and there is in the British Museum a stuffed specimen, exactly similar. The one that died at sea was shy at first, but afterwards fed on biscuit with willingness, and its voice differed from both the horse and ass. It came from the mountains of Acrai Guinea.

"It would appear that this species is not gregarious in Africa, but an inhabitant of mountain cover, and always desirous of the shelter of the woods. It comes down to the wells and drinking springs alone, or in small families, and is there liable to be waylaid by men, the great felinæ, and hyænas; but there is no want of courage in its defence, biting fiercely; and having a very delicate sense of smell, danger is avoided by the wariness of its actions, and the readiness of its rapid retreat up the mountains."

We have devoted the more space to this animal, as it is rarely described separately in zoological works.

A very neat synopsis of the "*Equidæ*," in the equine form, the asinine, the hippotigrine, and the hybrid, is inserted at the end of the work, with the specific characters of each.

It may be deemed superfluous to praise the work of two so well-known naturalists as the names of the authors, yet we cannot refrain giving to our readers our unqualified approbation of this publication, in a cheap condensed form; showing great ability and research, and highly scientific, and equally valuable to the cursory reader and the advanced zoologist.

WIRE WORM.

TO THE EDITOR OF THE WEST BRITON.

Sir,—Perceiving that the ravages of the wire-worm have become of such serious extent as to cause much anxiety for its destruction, and feeling assured that any information connected with that desirable object will be acceptable, I forward the following account of *experiments*, made by Mr. George Pearce, farmer, of Pennare, Goran, who kindly permits my making whatever use I please of them. I have therefore great pleasure in giving them publicity, and at the same time, beg to say, from the observations I have made, and the opportunities afforded me by observing his progress, I have no hesitation in saying that, if his system be *properly followed up*, this enemy of our crops *may be, in time, completely spoiled.* Some time in the year 1837, I communicated to you Mr. Pearce's proceedings, which were as follows:—In the winter of 1836-7 he had a field of Wheat, of three acres, *completely destroyed* by the wire-worm,—he ploughed it up and sowed it with turnips; he found that his turnips began to fail also,—he then employed women and children to dig the earth from the turnips attacked, and take out the worms, and in this manner 23,000 were brought to his house and counted over; some he paid for at the rate of 1½d. per hundred, others at 1d. per hundred. By this means he saved *considerably more than half of his crop of turnips* and *had an excellent* crop of barley after. The field has since been in grass three years—it is now in course of preparation again for turnips, when he hopes to follow the former method, and has no doubt of getting a crop of wheat next year. In 1840 he sowed the adjoining field of two acres with wheat, *without previously taking a crop of turnips*—the worms destroyed all but a small piece, from which he got two bushels. He sowed the parts where the wheat was destroyed with barley, this also fell a prey to the worms; he then commenced picking, and had 27,000 brought in, for which he paid 1d. per hundred—thus, in these two fields, of only five acres, the enormous number of 50,000 worms were picked and paid for, independently of several thousands which were picked by Mr. Pearce and his servants. Mr. Pearce would strongly recommend that turnips should be *invariably sown before wheat* in *all cases* where land is infested by wire-worm, whether it is to be folded or not; and that *the turnips should be drilled a good distance apart*—to be left thick in the rows to allow for destroying a part in the collecting the worms,—*above all, to be careful to destroy every particle of vegetation between the rows, in order to drive the worm to the turnip for support*, for they will eat almost anything green. It will greatly facilitate the picking by being in rows, and greater regularity will be observed in the process by this plan. If well executed, he feels confident that a crop of wheat may be saved; and instances the case of a farmer who adopted his plan in a field partly planted with turnips and potatoes. Where the turnips were, he picked—*there he has a good crop of wheat growing;* where the potatoes were, he did not pick—*and there the wheat is destroyed.* Mr. P. is of opinion that land may be cleared of the worm for from 5s. to 7s. per acre.

There is an estate adjoining this parish which has been very much infested with wire-worm for years, and every means have been tried without success, such as salt, lime, &c., and all failed until the proprietor saw the account of Mr. Pearce's proceedings in your paper. He has adopted it ever since, and says that already he has derived great benefit from it, and has no doubt in time his farm will be completely cleared of them. Many others have also derived benefit from the adoption of this plan, and are now going to work in right good earnest; and it is pleasing to see the women and children following the plough, picking up their hundreds in a day, which they deposit in a tin cup suspended before them by a string—in fact it would be advisable to pick *whenever the land is moved*, or there is a crop of any kind—for they attack all, whether it be potatoes or wheat, turnips or barley, oats, or anything else ; and wherever they are at work, their movements may be traced by the sickly appearance of the plants ; and by a little experience and practice it becomes so familiar that the ravages are detected immediately they are commenced. They are easiest taken in Swedish turnips, which appear to be their favourite food.

It strikes me forcibly that those injurious things, *Docks*, might be gathered at the same time when following the plough for the worms, and put into a little basket, and then into something larger at the end of the furrow—thus as it were "killing two birds with one stone." I merely throw this out as a hint.

I confess, Mr. Editor, I ask for a great deal of your valuable space ; but considering as I do, and knowing that you will agree with me, that the subject is of great importance, I feel assured that you will give it a place in your columns. Should any agriculturist wish for any further information, Mr. Pearce, I am sure, will readily give it. I remain, Sir, your obedient servent,

Goran Haven, May 18, 1841. C. W. PEACH.

DEER-STALKERS REFRESHING AT THE BUTTERY HATCH.

"A SCENE OF THE OLDEN TIME."

Of late years Deer-stalking has become so fashionable, that this exciting sport is deemed less a matter of marvel than in days of yore. This fascinating pastime has been eulogised by writers of all ages. Sir Walter Scott, of modern historians, awakened in the minds of his admiring readers the desire of running over the same ground as that hero of the Highlands, the bold Rob Roy ; and of late years, Mr. Scrope has gratified the lovers of wild sports with his splendid work on Deer-stalking. A more delightful book never was penned ; we have read and re-read it, and each time with increased pleasure. The wild deer of the Highlands is immeasurably superior in flavour, as well as beauty, to any other of the stag species. They will occasionally come down to the moors and browse upon the heather, but they are rarely to be met with. We have treasured up an anecdote related by one of the best sportsmen of the day, and which, as it bears upon the case before us, we will take leave to transcribe :—

"While traversing a low range of moors, an incident occurred which, at this season, was unaccountable. A red-and-white setter pointed at the top of a little glen. The heathy banks on both sides of a mountain rivulet undulated gently from the stream, and caused a dipping of the surface ; the ground seemed a favourable haunt for grouse, and our dogs were beating it with care ; observing the setter drop, his companions backed and remained steady, when suddenly 'Hero' rose from his couchant attitude, and the next moment a wild deer, of enormous size and splendid beauty, crossed before the dog, and sprang the birds he had been pointing. The apparition of the animal, so little expected, and so singularly and closely introduced to our view, occasioned a sensation I had never hitherto experienced. I rushed up the bank. Unembarrassed by our presence, the noble deer swept past us in a light and graceful canter, at a short distance of seventy or eighty yards. I might have fired at and annoyed him, but on a creature so powerful small shot could have produced little effect ; and none but a cockney, under such circumstances, would waste a charge. To teaze, without a chance of bringing down the gallant beast, would have been a species of useless mischief, meriting a full month upon the tread-mill. I gazed after him as he gradually increased his distance ; his antlers were expanded as fully as my arms would extend ; his height was magnificent, and, compared to the fallow-deer, he seemed a giant to a dwarf. The sun beamed upon his deep bay side, as he continued describing a circular course over the flat surface of the moor, till reaching a rocky opening leading to the upper hills, he plunged into the ravine, and we lost sight of him. What could have driven the red deer so low upon the heath was marvellous. Excepting when disturbed by a solitary hunter, or a herdsman in pursuit of errant cattle, or driven from the summit of the hills by snow and storm, they are seldom seen below the Alpine heights they inhabit. But the leisure pace of the beautiful animal we saw to-day, proved that he had not been alarmed in his lair, and led one almost to fancy, that in freakish mood he had abandoned his mountain home, to take a passing glance at men and things beneath him."

But to resume. Stags are still found wild in the Highlands of Scotland, in herds of four or five hundred together, ranging at full liberty over the vast hills of the north, and some of them grow to a vast size. One of these wild stags (and the authority can be relied upon) has been known to weigh three hundred and fourteen pounds—exclusive of the entrails, head, and skin. Formerly, the great Highland chieftains used to hunt with all the magnificence of Eastern monarchs, assembling four or five thousand of their clan, who drove the deer into the toils, or to the stations their Lairds had placed themselves in. But, as the chase was frequently resorted to as a pretext for collecting their vassals for rebellious purposes, an act was passed prohibiting any assembly of this kind.

Stags are likewise met with on the moors that border on Cornwall and Devonshire ; and in Ireland, on the mountains of Kerry, where they add greatly to the magnificence of the romantic scenery of the Lakes of Killarney. Dr. Johnson describes the stags kept in parks, and which herd with fallow-deer, as not exceeding the common deer in size, and that their flesh is of equal flavour.

From a stag that had been committing depredations on the farmers' corn during a whole summer, and which was accidentally hunted and killed after a long run, a haunch weighing forty-six pounds was allowed by competent judges to be the highest flavoured and fattest venison they had ever tasted.

The stag's age is partly known by the horns, which he begins to shed about the end of February, and the new horns are complete and polished in July or August. At six years the antlers amount to six or seven on each side ; their number is uncertain, nor can the years be precisely ascertained beyond that period, as the new horns come like those last shed. The eye of the stag is peculiarly beautiful—soft and sparkling, and is, for these attributes, frequently alluded to in Eastern poetry ; he hears quickly, and his sense of smelling is highly perfect ; his powers of leaping are often astonishingly exerted during the chase ; and in the New Forest, is a celebrated spot called the Deer Leap, where a stag was once shot, and in the agony of death, collecting his strength, gave a bound which so surprised those that saw it, that it is commemorated by two posts, fixed at the extremity of the leap—the space between them is something like eighteen yards.

[illegible]

[illegible]

[illegible]

IXWORTH FARMERS' CLUB.

FIRST HALF-YEARLY REPORT.

We, your committee appointed to draw up a report of the proceedings of this club since its commencement, consider it would be most advisable to lay before the members the transactions of each meeting, embracing the discussions upon the various subjects, in the order in which they stand in the minute book, and to add, as far as it is practicable, the arguments upon which the resolutions were founded.

FIRST MEETING—JUNE 15TH, 1840.

The first subject introduced for discussion at this meeting was, "*The best method of converting artificial and other grasses into hay, so as to preserve in the greatest degree, their nutritious qualities.*" The discussion upon this subject was commenced and followed up with considerable interest, but there appeared to be little difference of opinion, almost all agreeing that the less artificial grasses were exposed to the weather, by turning or strewing out, the better would be the quality of the hay; and that it would be better to cock them almost immediately, provided they were quite dry, and turn the cocks over till the hay was fit to cart.

With regard to the natural grasses, it appeared that the best way is, to strew them out immediately after being cut, and keep them moving as much as possible; for which purpose a hay-strewing machine, drawn by one horse, was particularly recommended. It was likewise asserted, that salt strewn on the stack, in the proportion of two pecks to one ton of hay, would be very beneficial in checking any undue fermentation. A large majority of the meeting ultimately passed the following

RESOLUTIONS.

"That it is the opinion of this meeting, that in order to convert the natural grasses into hay, it is expedient to preserve their nutritious qualities; that the grasses should be strewn out during the day, immediately after being cut, and kept constantly moving about and cocked at night; and so to be strewn out by day and re-cocked at night, making them larger from time to time. This process to be continued till the hay is made."

"That for the artificial grasses, it is considered right to let them lay on the swath, and move them as little as possible till they are ready to cart."

"That salt is highly recommended to be strewn on the stack, in order, not only to check fermentation, but to make the hay more nutritious and palatable to cattle."

"That the best time to cut natural grasses is just at the time of flowering."

SECOND MEETING—JULY 13TH, 1840.

The secretaries reported that they had received the first annual report of the Walton Farmers' Club, and were directed to acknowledge the receipt of the same with thanks.

"*The comparative advantages of mowing and reaping wheat, and the best method of harvesting wheat and all other kinds of grain,*" was the subject for the evening's discussion.

This meeting was but thinly attended, and it appeared that there were but one or two persons present who had practised mowing extensively, but all their arguments tended strongly to prove that it had a decided advantage over reaping; firstly, because you may obtain an increased quantity of straw of superior quality, and consequently be enabled to produce a greater quantity of manure, which on a light-land farm is of considerable importance; secondly, you may obtain an increased quantity of corn; and thirdly, that in a wet season, it is not only less injured, but from the sheaves being more loosely tied, the air circulates freely through them, the corn is sooner fit to cart, and the quality is in every respect as good as reaped wheat. On the other hand it was argued that mowing was a slovenly way, and had not the neatness of appearance of reaped wheat, and that by getting *all* the corn off the land, you leave nothing for the gleaners; and as gleaning has been allowed from time immemorial, it ought not to be done away with, and indeed it is always looked forward to by the poor people as an assistance in paying off the necessary debts they may have contracted. These objections were met by stating, that, as the labourers oftentimes purposely strewed corn while reaping it, mowing was absolutely necessary in self-defence, and that the farmer had every right to all he could grow on his land; that, though gleaning was certainly of very ancient date, yet it never had, either by enactment or otherwise, been rendered lawful, and that the quantity of corn obtained by gleaning off a large farm, was of very serious consequence. It was admitted by all that the mode of mowing required very considerable improvement. After some further discussion concerning the use and abuse of gleaning had been entered into, but to which no satisfactory conclusion was come, the meeting agreed to the following

RESOLUTIONS.

"That it is the opinion of this meeting, that the process of mowing wheat is considered to be the best, inasmuch as the work can be done in less time, at less expense, that it takes less harm in a wet season, and may be carted sooner after cutting and after rain; that there is a larger quantity of straw, and of better quality, and that the land is ready for tillage immediately afterwards. With respect to the propriety of mowing either *to* or *from* the corn, this meeting has not had sufficient experience to decide."

"That with regard to the best mode of harvesting the other kinds of grain, there is no sufficient evidence at present to show that any other plan than that usually practised in this neighbourhood, can be beneficially adopted."

THIRD MEETING—AUGUST 10TH, 1840.

"*The propriety of commencing the working of fallows immediately after harvest, and the best method of preventing smut in wheat,*" were the subjects entered for discussion at this meeting: but in consequence of its occurring at the busiest time of harvest, the attendance of members was so small, that it was deemed advisable to postpone the subjects to the next meeting.

FOURTH MEETING—SEPT. 7TH, 1840.

At this meeting the subjects which were postponed from the last meeting, viz.—"*The propriety of commencing the working of fallows immediately after harvest and the best method of preventing smut in wheat,*" were discussed. The former subject was introduced by a member observing, that some think fallowing altogether unnecessary, but he considered it was, for several reasons, not only necessary but highly beneficial; first, by cleaning the lands from all kinds of weeds; secondly, by exposing the soil to the air, it absorbs oxygen, so necessary for the food of plants, and allows the excrementitious matter of plants to evaporate; and thirdly, by well pulverizing the soil, the manure was so much better incorporated. It was likewise contended, that by commencing immediately after harvest, when the soil is usually dry, the weeds are more easily eradicated. The plan recommended was merely to stir the surface, and cause the seeds of annuals to vegetate, which may easily be destroyed, either by the harrow or scarifier, and then give one deep ploughing before winter. On the other hand it was contended, that the heavy rains of winter would so wash and cause the finely pulverized soil to run together, that great difficulty would be experienced in working them in the spring, and that turnips usually succeeded better on land broken-up in May, if quite clean. After some discussion, as it appeared that the majority of the meeting were in favour of early fallowing, it was agreed that they should pass the following

RESOLUTION.

"That it is expedient to commence fallowing the land intended for turnips directly after harvest, and to be continued during the autumn in dry weather."

"*The best method of preventing smut in wheat*" came next under discussion: when it was stated, that smut is a fungus adhering to wheat, which caustic or poisonous substances will destroy. Many preventives were detailed to the meeting. By dipping the wheat in strong brine, and dry it with recently slacked lime. By sowing old wheat, the fungi, by keeping, are destroyed. Blue vitriol has been used with excellent success. Arsenic, at the rate of half a pound to the coomb, by simply wetting the wheat and dredging the arsenic on from a box, taking care to mix it well, and after laying twelve hours, to be dried with recently slacked lime. Another plan, stated to be very efficacious, was to run lye from wood ashes, and boil, for one hour, one pound of arsenic with thirty gallons of the lye, which quantity will be sufficient to wet ten coombs; to be afterwards dried in the usual way with lime. It was observed that some soils would produce smut in a greater degree than others: and an instance was adduced in which wheat, treated precisely in the same manner, produced smut in one field, while the other was entirely free. It was likewise observed, that it would be very desirable to find some substitute for arsenic, as it was not only very injurious to children dropping the seed, but dangerous to be used on a farm where there is much live stock. It should be very particularly remembered, that the lime should be applied quite fresh, before it has lost any of its caustic qualities, but not till after the other solutions, whatever they may have been, have had time to take effect, for the lime absorbs the moisture, and of course stays all further effect. After an animated discussion, the meeting agreed to the following

RESOLUTION.

"That it is the opinion of this meeting, that to prevent smut in wheat, the seed should be steeped in some caustic or poisonous solution, and that arsenic is the best hitherto used. The proportion and the mode of using most recommended, is to run lye from wood ashes, and boil for an hour one pound of arsenic with thirty gallons of lye, and about one stone of salt, which will be sufficient for ten coombs, the seed to be afterwards dried with recently slacked lime."

FIFTH MEETING—OCT. 12TH, 1840.

"*The best method of sowing wheat, and the quantity of seed per acre. Whether it is better to plant on a fresh or stale furrow? and the best varieties of wheat to be grown.*" This subject was introduced by a member observing, that his plan was to dibble the flag and drill the loose land. He considered that dibbling the flag was advantageous, as the treading gave a firmness to the land so beneficial to the wheat crop; whilst it was argued against dibbling, that the children employed to drop, distributed the seed very unequally, and that drilling, for its greater certainty, was to be preferred. Several experiments were detailed to the meeting, where one stretch had been drilled, and another dibbled alternately throughout the field; and that at harvest no difference was perceptible. One experiment was still further carried out, and there the drilled was superior to the dibbled by two bushels per acre. The method of dibbling most recommended for light and poor soils was, to put two rows upon a flag, and where drilling was practised, the narrow intervals answered best; but that the distance might be advantageously varied according to the quality of the soil. Upon the best variety of wheat to be grown, much discussion ensued, each member fancying the variety he grew to be the best; the following varieties had each their advocates: the Tunstall, producing well on good soils; Golden drop, also yielding well; Old Kent and Brown's White prolific; Copdock and Whittington white, recommended for light soils. Several of the members advocated sowing red-and-white mixed, but it was objected that they did not ripen well together, and that the white would soon disappear, the red being the much hardier variety. The meeting then agreed to the following

RESOLUTIONS.

"That it is the opinion of this meeting, that dibbling and drilling may both be pursued with advantage, according to the season and state of the land, and that the quantity of seed may vary from eight to ten pecks per acre."

"That a stale furrow is decidedly to be preferred to a fresh one."

"That with respect to the varieties of wheat to be grown, much difference of opinion existed, but the red golden drop appeared to have the preference."

SIXTH MEETING—NOVEMBER 9TH, 1840.

"*The best and most economical method of getting off and storing root crops, and of feeding cattle, with the view of making the best and richest manure,*" were the subjects proposed for discussion at this meeting. Upon the first it appeared to be the usual practice of the members present to cart the roots to some spot convenient for consuming, to stack them up, cover them with straw or haulm, and afterwards with earth, leaving apertures at the top for the escape of the heat caused by fermentation. The width of the rows at bottom not to exceed nine feet for mangel, and four feet for Swedes, and tapering gradually upwards. It was then agreed to pass this

RESOLUTION.

"That this meeting is of opinion, that root crops should be got off the land as soon as possible after they have attained their full growth, and that clamping is the most judicious method of preserving them; the width of the clamp for Swedes not to exceed four feet."

Upon the second proposition "of feeding cattle," the meeting was decidedly of opinion that stall-feeding was to be most recommended, because, as a smaller quantity of straw is required, the manure from it must be of better quality; and because, by feeding in yards, a large quantity of straw is stamped in without receiving any of the excrements of the cattle: but to pursue stall-feeding to the greatest advantage, tanks should be made to collect the urine of the cattle, and afterwards poured equally over the yard; and lastly, it was asserted that animals fatted much quicker in a stall than in the yard. The opinions of the meeting were then embodied in this

RESOLUTION.

"That the stall-feeding of cattle is considered better than any other method of converting straw into rich and fertilizing manure."

For the committee,
Signed. R. STEDMAN. J. SIMPSON, jun. Secretaries.

AGRICULTURAL RESEARCHES.

No. 1.

ON REAPING WHEAT.

BY MR. JOHN HANNAM, NORTH DEIGHTON, YORKSHIRE.

(From the Quarterly Journal of Agriculture.)

In giving to the public the following paper, the aim of the writer is to call the attention of agriculturists to an important subject, and to incite them to make their own investigations, rather than to rely upon his, or upon the common usage. That a question which determines the proper condition in which the wheat crop should be reaped is worthy of this investigation, needs no proof. That, however, it should still require this investigation—that a *questio vexata* should be made of what common custom has decided, and centuries of practice sanctioned, is deserving of some explanation.

Agriculture is at once the oldest and the youngest of sciences. The oldest in practice, the youngest in theory. To call it a science as it was practised in Great Britain a few years ago, would be an absolute misnomer. It was a practice without principles to regulate it; and common usage, sanctioned by ancient dogmas, consequently ruled in their stead. Under all circumstances these remained the same, and of course the practice varied not. The road which custom had marked out was beaten and smooth, and the farmer continued to travel upon it. It was a circle, too, and brought him always to the place he started from; and he never lost himself. But in travelling upon one path, and at one pace, for a length of time, we both wear out the road and incapacitate ourselves for travelling at any other pace. So a long course of injudicious management and cropping, not only exhausted the arable land, but—as the fatalism of the Turks has ever prevented them from marching on with contemporary nations in the scale of civilization—the practice of a science, the cultivation of which, the same here and everywhere, required no exertion of mind, deadened the spirit of inquiry in the farmer, and left him an easy and uninquiring being; knowing nothing from himself, but *governed by a hereditary feeling of obedience to ancient usage.*

In newer sciences it was otherwise. Each step was proved before it was taken. The mind was taught to investigate instead of to follow the practice of others, and thus its powers were improved at the same time that another link was added to the chain of the science. The result of this was the birth of a progressive improvement in every branch. And so rapidly has this spirit manifested itself within the last age, so great has been the improvement in things that were thought to admit of none, that it may be now stated as the established principle of modern science, to *acknowledge no perfection*, and to *know no impossibility.*

One of the greatest benefits produced by this system, is the inoculation of agriculture with the same principles. Within the last half century, the same method of observation, experiment, and deduction, has been pursued by agriculturists, and *with the same results.*

The efforts of societies and scientific individuals have been attended with such success, that it can scarcely be doubted that the gross quantity of agricultural produce has been doubled within the last forty years. In the course of this time, revolutions in the very systems which custom had most sanctioned have taken place; and the dogmas, which age had pronounced infallible, have been so often falsified, that it would be impossible to find a farmer, who is at all "up to the age," who would venture to point out one system or one article connected with agriculture as incapable of improvement.

In fact, the wheel of improvement has got such an impetus that it *must* go on, and he will be set down as a vain pedant, or an ignorant sceptic, who pretends to say *where* it must stop. In fact, the very first agricultural axioms are reversed. It *was* the practice to take ancient custom as an infallible guide; nothing was then doubted, nothing investigated, and, consequently, *nothing* improved. It *is now* the principle to do nothing without a reason; every thing therefore *is* doubted, every thing investigated, and, consequently, every thing *improved.*

That this question then should, amongst others, be investigated, will not appear strange; long usage, according to the popular principle, being no infallible criterion of perfection, this might be one of its *errata*, and its high importance made it the more necessary that it should be investigated.

But it was not this principle abstractedly that produced *these* experiments. In referring to his "*books*," during the commutation of the tithes in this parish, a very near connexion of mine (whose agricultural experience extends over a period of more than half a century, and who, when in the active management of land, was *locally noted* for producing good samples of wheat) shewed me a list of all the corn he had produced and sold. Observing that the prices he had obtained for wheat were nearly always above those of the neighbouring markets at the same time, he informed me that he was in the habit of commencing harvest a week or ten days before the generality of farmers, it being his practice to *reap his wheat before it became quite ripe.*

Thinking that custom must be the best guide on this point, and that age often looks upon the past, as youth upon the future, through a glass that invests objects and thoughts with a partial hue, this explanation did not make much impression upon me, till some months after (how many I cannot exactly say), when I observed, from a notice in the newspapers, that a certain learned professor had proposed reaping wheat *quite green*. The result was a determination to take the first opportunity of giving both systems a fair trial. Of this trial the following are the *details* and *results*:—

Having selected a field of "*old square-headed red wheat*" for the experiments, on August 4, 1840, I cut a sheaf. At this time it was quite green, *i. e.* both straw and ears were in full vigour, and full of sap. Though the grain appeared perfectly formed, the chaff still adhered so firmly to it that it was scarcely possible to separate them by friction in the hands. When separated it was large and plump, but so full of milk that the slightest pressure reduced the whole to a juicy consistency or pulp.

This sheaf stood in the field for a fortnight, when it was housed. On the same day, August 18, I cut another. The wheat was of course yet "green" speaking positively, or "not ripe," if we speak negatively,—being what farmers commonly term "*raw*." That is, the straw, though appearing at a distance green, when examined closely was of a hue fast approximating to yellow; while, for about a foot upwards from the ground, it was *quite* yellow. The ears, too, were more open, the chaff tinged with various shades of yellow and green, and the grain itself, when separated, soft and pulpy, but not near so full of fluid as before. The judgment of the farmer will, however, best tell him the conditions of the wheat, both at this and at the preceding cutting, when I say, that in another fortnight the whole field was ripe. At the end of this fortnight (September 1), I housed the sheaf cut on August 18, and which had remained exposed to the weather in the interval, and cut a third. This I have said was "ripe;" but by the term I don't mean that degree of ripeness when the straw breaks, the ears curl, and the grain shakes out; but that condition in which it is customary to commence reaping it,—when the straw, from the roots to the ear, is uniformly yellow, and has lost all symptoms of vivid health.

On the 14th of September the third sheaf was taken from the field and carefully preserved, along with the other two, till the 1st of November, when, out of each sheaf, I selected 100 ears, and put each parcel into a separate bag. The straw from each of these parcels of ears was preserved carefully.

The ears in one bag (No. 1, or that cut very green) were now thrashed, the chaff carefully separated, and the gross weight of the corn yielded ascertained by an extremely accurate balance. The weights of a fixed measure of a certain number of grains were next found. *To avoid error, this was repeated several times.*

No. 2, (cut raw) and No. 3 (ripe) underwent the same process: for the results of which see the following table.

Comparative Weights of Wheat reaped at different periods.

Time of Reaping and Condition.	Gross Produce	Equal Measure.	Equal Number of Grains.
No. 1, Aug. 4, (very green)....	576	568	19¾
No. 2, Aug. 18, (raw)...........	736	580	23¼
No. 3, Sept. 1, (ripe)...........	650	570	22¾

As this table is merely comparative (the weights used being in parts, and decimal parts of the same, for the convenience of minute experiments), it may not be unnecessary to give the following table of the absolute weights of each sample in ounces, drams, scruples, and grains Troy:—

	Gross Produce.				Equal Measures.				Equal Number of Grains.			
	℥	ʒ	℈	gr.	℥	ʒ	℈	gr.	℥	ʒ	℈	gr.
No. 1......	4	0	0	0	3	7	1	13	0	1	0	5¾
No. 2......	5	0	2	13	4	0	0	13	0	1	0	17½
No. 3......	4	4	0	6	3	7	2	0	0	1	0	15¾

The straw belonging to each sample was now weighed (all the parcels having previously been made of the same length, commencing from the bottom of the ear), when the following was the result:—

Comparative Weights of 100 *Straws, of an equal length, belonging to the Samples Nos.* 1, 2, *and* 3.

No. 1, (green), = 550.
No. 2, (raw), = 475.
No. 3, (ripe), = 450.

The next thing to be ascertained was the quality of the produce, or the comparative worth of each description. Believing in the old saying, that

> "The proper value of a thing
> Is just as much as it will bring,"

on the 5th of November I attended market, and asked the opinion of an extensive corn-grower as to the values of the respective samples, according to the prices of the day. His opinion was,

No. 1..............	61s. per	quarter.
No. 2..............	64s.	do.
No. 3..............	62s.	do.

Putting the same samples into the hands of an extensive corn-factor and miller, his value, *and what he would give to buy*, was, for

No. 1..............	61s. per	quarter.
No. 2..............	63s.	do.
No. 3..............	61s.	do.

Adding these values respectively together, and taking the mean price of each (by which we shall obtain as near an approximation to the truth as possible), we have

No. 1,	=	61s. 0d.	per quarter.
No. 2,	=	63s. 6d.	do.
No. 3,	=	61s. 6d.	do.

The loss or gain on these samples, by reaping at different periods, will be best seen from the following

Table of the Relative Weights and Value of Wheat cut August 4, *August* 18, *and September* 1, ; *that cut last (or ripe) being taken as the standard, and unity assumed as its value in each column.*

	Weight of Gross Produce.	Weight of equal Measures.	Weight of an equal number of Grains.	Value.	Weight of the Straw.
No. 3, Sept. 1, (ripe)	1	1	1	1	1
No. 2, Aug. (raw) ..	$1\frac{43}{325}$	$1\frac{1}{37}$	$1\frac{2}{91}$	$1\frac{4}{123}$	$1\frac{1}{18}$
No. 1, Aug. (green)	$\frac{288}{325}$	$\frac{284}{285}$	$\frac{79}{91}$	$\frac{122}{123}$	$1\frac{2}{9}$

According to this table, it is evident that the wheat reaped *a fortnight* before it was ripe has the advantage of the ripe in every point:

1st. In weight of gross produce $\frac{43}{325}$, or $13\frac{1}{5}$ per cent.

2nd. In weight of equal measures $\frac{1}{37}$, or nearly $\frac{1}{2}$ per cent.

3rd. In weight of equal number of grains $\frac{2}{91}$, or nearly $2\frac{1}{3}$ per cent.

4th. In quality and value $\frac{4}{123}$, or above $3\frac{1}{4}$ per cent.

5th. In weight of straw $\frac{1}{18}$, or above 5 per cent. On the other hand, that reaped *a month* before it was ripe, has an advantage of 22 per cent. in weight of straw, compared with the ripe, but in every other point has the disadvantage: thus,

1st. In weight of gross produce $\frac{37}{323}$, or $11\frac{5}{13}$ per cent.

2nd. In weight of equal measures $\frac{1}{283}$, or rather more than $\frac{1}{3}$ per cent.

3rd. In weight of equal number of grains $\frac{12}{91}$, or better than $13\frac{1}{6}$ per cent.

4th. In quality and value $\frac{1}{123}$, rather more than $\frac{4}{5}$ per cent.

It may be here necessary to mention that the sample No. 3 (ripe) was very bold, but *rather coarse*, feeling rough in the hand; while No. 2 (raw) was quite as bold, but *very fine and thin in the skin*. No. 3 (green) was also a good and clear sample, *but much smaller than either of the others*. This will account for the apparently anomalous fact of their being scarcely any difference in the marketable value of the *green* compared with the *ripe*, while there is a difference of 13 per cent. in favour of the ripe in weight of equal numbers of grains; for the sample being dry and good, the *buyer* lost little by this inferiority in the size of grain, as the weights of equal measures were the same,—the difference of $\frac{1}{283}$ scarcely making $\frac{1}{2}$lb. in the sack.

Before venturing to draw any deductions from these experiments, let us put their results in a still more practical point of view.

Suppose we have three acres of wheat, one of which, reaped when ripe, yelds us 30 bushels of corn and one ton of straw; what will be the gross value of the same? And what the value of the other two acres, according to the data furnished by the foregoing experiments, supposing each acre to be exactly equal in crop, and the one reaped *a fortnight* and the other *a month* before the ripe?

Before answering this, we must fix a value for the straw—say 2d. per stone, which, taking into account that used by the farmer himself—and many cannot sell any—is as much as it is actually worth. Whence we have, for the acre of ripe,

30 bushels of wheat, at 61s. 6d. per qr. (the price of sample No. 3)..	£11	10	$7\frac{1}{2}$
1 ton of straw, at 2d. per stone....	1	6	8
Gross produce....	£12	17	$3\frac{1}{2}$

Let us next take the acre cut "*raw.*" Before we can come to its value, we must first resolve the question—How much, in measure, will the acre produce us, supposing it to produce 30 bushels, if cut when ripe?

In solving this, as we must assume each crop to be exactly equal if cut at the same time, it is obvious that, if we would determine the difference caused by reaping at an earlier period, we cannot found our calculations upon the *gross weight* of the two samples (Nos. 2 and 3); for, although there is no doubt but that this weight was materially affected by the condition of the wheat at the time of reaping (indeed the difference in the weight of equal numbers of grains proves the fact), it is possible that, in selecting the 100 ears from the sheaf, I might take out of one sheaf ears with a greater number of grains in them than those taken out of the other. This, then, would affect the total or gross weight; and, therefore, it cannot be taken into account in the present case, where *both acres are supposed to have an equal number of grains.*

To the weights of equal measures, and of equal numbers of grains, both the result of many careful trials, this objection cannot be urged; and they are amply sufficient to enable us to tell the produce of an acre of "raw," when that of the "ripe" is 30 bushels. Thus, in the first table, we have

	Weight of equal measures.	Weight of equal numbers of grains.
No. 2 (raw)....	580	23·25
No. 3 (ripe)....	570	22·75

Now put m = this measure, and n = the number of grains weighed of each sort; then

$$n : 22.75 :: 1 : \frac{22.75}{n} = \text{the weight of one grain}$$

of No. 3, whence

$$\frac{22.75}{n} : 1 :: 570 : \frac{570\,n}{22.75} = \text{the number of grains}$$

of No. 3 in the measure m.

Again, similarly, $n : 23.25 :: 1 : \frac{23.25}{n}$, weight of one grain of No. 2, and

$$\frac{23.25}{n} : 1 :: 580 : \frac{580\,n}{23.25} = \text{the number of}$$

grains of No. 2 in the measure m.

And $m \div \frac{570\,n}{22{\cdot}75} = \frac{22.75\,m}{570\,n}$ = the space occupied by one grain of No. 3 (ripe); and

$$m \div \frac{580\,n}{23.25} = \frac{23.25\,m}{580\,n} = \text{the space occupied}$$

by one grain of No. 2 (raw).

Now, as there are the same number of grains upon each acre, and as the acre of ripe yields 30 bushels, we have

$$\frac{22.75\,m}{570\,n} : \frac{23.25\,m}{580\,n} :: 30 \text{ bushels} : 30.1307313$$

bushels, the produce of one acre cut a fortnight before the ripe.

Again, by reference to page 20, in the last table, we have 1 and $1\frac{1}{18}$ as the relative weights of the straw No. 3 and No. 2; whence, as No. 3 is supposed to produce one ton,

$1 : 1\frac{1}{18} :: 160$ stones : $168\frac{8}{9}$ stones, the weight upon the acre reaped when raw. And for the whole produce of the acre, we have

	£	s.	d.
30.1307 bushels of wheat, at 63s. 6d. per quarter	11	19	$1\frac{3}{4}$
168 stones of straw, at 2d. per stone	1	8	$1\frac{3}{4}$
	£13	7	$3\frac{1}{2}$

Adopting the same course for the produce of the acre cut first, *i. e.* a month before the ripe, and which corresponds with sample No. 1, we get

$$\frac{568\,n}{19.75} = \text{the number of grains of the } \textit{green} \text{ in the}$$

measure m; whence $\frac{19.75\,m}{568\,n}$ = the space occupied by one grain of green.

But (*vide* above), $\frac{22.75\,m}{570\,n}$ = space by one grain of the ripe; whence $\frac{22.75\,m}{570\,n} : \frac{19.75}{568\,n} :: 30$ bushels : 26.1356 bushels, the produce of the acre cut *a month* before the ripe. And (*vide* "Table of relative weights," &c., page 20.)

$1 : 1\frac{2}{9} :: 160$ stones : $195\frac{5}{9}$ stones of straw, the produce of the same; whence we have

	£	s.	d.
26.1356 bushels of wheat, at 61s. per quarter	9	19	3¼
$195\frac{5}{9}$ stones of straw, at 2d. per stone........................	1	12	7
	£11	11	10¼

The total products of the three acres stand thus:—

	£	s.	d.
No. 3, reaped when ripe,........	12	17	3½
No. 2, Do. a fortnight earlier,..	13	7	3½
No. 1, Do. a month before the ripe........................	11	11	10¼

Shewing a *loss* of 1*l.* 5s. 5d., or about 10 per cent., by cutting very green; and *a gain of* 10s. *per acre*, or nearly 4 per cent., by reaping in a raw state, or a fortnight before it was ripe.

From the above details, it would appear that it is the farmer's interest to cut his wheat before it becomes thoroughly ripe. Many, no doubt, will be disposed to doubt deductions of such importance drawn from such limited experiments. This objection the writer anticipates, because it is a natural one, which he felt himself, when he considered the most important conclusions which resulted; when, however, he retraced, *step by step, his investigations, without any variation in that result*, he could no longer refuse to believe it true till he proved it untrue. He is aware that there are other points of consideration in this subject—that there are peculiarities in the nature of land, of seed, or of season, and that there is, as in all man's investigations, a *possibility* of error; any of which circumstances might materially affect the result of experiments upon so limited a scale as the present one; and for this reason he will, if all be well, give the subject a trial in the ensuing harvest, on a much more comprehensive scale. That the results of *these* experiments will be corroborative in the main points, he has no doubt, and for this cause he feels no hesitation in laying the preceding "details" before the agricultural world; moreover, as he has in no case given a deduction without the grounds upon which it rested, the degree of "acceptation" which the reader may give it rests with himself. The most sceptical, however, he flatters himself will think it "worthy" of *being tested*, if of nothing more.

In testing, however, the conclusion which the foregoing experiments warrant, there are some other advantages which strengthen that conclusion, which must not be forgotten. That they have not been considered in the preceding pages, is not because they are of no import, but, on the contrary, because they are of such consequence that the writer could not assign them *an adequate momentary value*. And had he attempted to do so, he would have at once made the details of his experiments valueless, by mixing the real results of *practice* with the imaginary ones of opinion. Before the subject, however, can be thoroughly sifted, they must be considered. The circumstances are these:—independently of the four per cent. gain (according to the foregoing experiments) by reaping our wheat a fortnight before it is ripe, we have,

1st, Straw of a better quality.
2nd, A better chance of securing the crop; and,
3rd, A saving in securing it.

1st, "Straw of a better quality." This is easily demonstrated both for the purpose of food and manure.

As an article of food the value of any vegetable depends upon the gross quantity, or upon the combination of certain substances termed soluble, from their entering into union with water. This rule applies particularly to the grasses which are used for the purpose of feeding stock[*] The substances generally found in these grasses are saccharine matter or sugar, mucilage or starch, and gluten or albumen, and bitter extract and saline matters. Of these the sugar is no doubt the most, and the extractive matter the least, nutritive; the latter having been found, by experiment, to come away in the dung of the animal consuming it, while the other matters were absorbed by the body.

Now wheat is a species of grass, and the value of the straw, as an article of food, depends upon the quantity of nutritive matter contained in it. "This nutritive matter must be very small in straw, as now generally used," the practical farmer will say, "for straw *per se* is but poor food, and scarcely able to sustain life." This is true; "from 400 grains of *dry* barley straw," says Sir H. Davy, "I obtained eight grains of matter soluble in water, which had a brown colour, and tasted like mucilage. From 400 grains of wheaten straw I obtained five grains of a similar substance." With this paucity of nutritive matter in the *straw* before us, how can we account for the fact that, in the sap of wheat, the straw, and in all succulent plants, there is *naturally a great proportion of mucilaginous and saccharine matter?*[†] The answer is this. In all grasses and succulent plants, the greatest proportion of this is present before the flower is dead ripe.[‡] So in wheat, when we allow the straw to remain till thoroughly ripe, a portion of the sugar is converted by the action of light, heat, &c., into mucilage,[§] and a great proportion of the nutritive powers of the grass absorbed by the atmosphere, or lost in some manner; for, as Mr. Sinclair observes in his *Report of Experiments on Grasses*, "there is a great difference between straws or leaves that have been dried after they were cut in a succulent state, and those which are dried (if I may so express it) by nature while growing. The former *retain all their nutritive powers*, but the latter, *if completely dry, very little, if any*."

As a manure, too, the straw cut "*raw*" is equally superior to the ripe; for, as it is an agricultural axiom that the better the food of an animal is, the better the manure from it, the manure from a stock consuming this straw, *containing a fair proportion of nutritive matter*, must be more valuable than that from stock consuming the ripe with *scarcely any in it*.

But a great proportion of the farmer's straw is converted into manure without undergoing the process of mastication and digestion. For this purpose the unripe straw is equally preferable, as all *unripe vegetables are manures without prepara-*

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[*] "The mode of determining the nutritive power of grasses by the quantity of matter they contain soluble in water, is sufficiently accurate for all the purposes of agricultural investigation."—Sir Humphrey Davy in his "Account of the Results of Experiments on the produce and nutritive qualities of different grasses and other plants, instituted by John Duke of Bedford."

[†] "The fluids contained in the sap-vessels of wheat and barley afforded, in some experiments which I made on them, mucilage, sugar, and a matter which coagulated by heat." Sir H. Davy, Agricul. Chem., 142.

[‡] *Vide* Agricul. Chem., Sec. 6, p. 264.

[§] The inferiority of the quantity of sugar in the summer crops, probably depends upon the agency of light, which tends always in plants to convert saccharine matter into mucilage. Ibid, p. 414.

tion[*]—the soluble and nutritive extracts which they contain, being the principal agents in forming vegetable manure; as they not only combine to render the process of decomposition the more rapid, by breaking down the woody fibres,[†] &c., in the manure heap, but are also in their pure and separate states stimulants to vegetation.[‡]

It may be urged that the increased value of the straw is more in favour of that cut very green (No. 1) than that cut a fortnight later (No 2). This is true; but, to produce this increase of value, if we cut our wheat so early as No. 1, we have a *desiccation of the grain to such an extent as to diminish the measured produce above* 12 *per cent.*; while, by reaping with No. 2, we are, so far from injuring either sample or measure, actually improving both, and at the same time *gaining* above 5 per cent. in the weight, and at least as much in the quality of the straw. For the increase of weight in the latter is not produced by a greater produce, but by the presence of a greater portion of those soluble substances which are alike necessary to animal and vegetable life—are alike the nutritive part of food and the quickening principle of manure.

2nd. We come now to the second advantage, the "*better chance of securing* the crop."

This is self-evident. We gain a fortnight at the commencement of harvest. If the weather be good, we can secure a great portion of our wheat before we should scarcely have begun upon the old system. If not, we can wait; so, under any circumstances, our chances of securing the grain must be greater. Moreover, if we take a retrospect of the harvests for a number of years, we shall find that nearly all the early harvests have been what we term "good" ones, *i. e.*, good as regards weather and the condition in which the grain was secured. When the peculiarities of our climate, its general fickleness, and its still greater liability to change as the autumn advances, are considered, this will require no explanation.

If we look, too, at the later harvests, we shall, I venture to say, find that, in nine cases out of ten, the grain which was cut first was secured in the best condition. As an example of this, the crop of 1839 will suffice. The crops were late, the beginning of reaping the same, and the result was, that in the north of England *full* 75 *per cent. of the whole wheat crop was damaged.* And full 75 per cent. of that which *was uninjured*, I will also venture to say, was that which was cut the first. In Yorkshire this was especially seen; for the *earliest wheat* was with the greatest difficulty secured. In this village (North Deighton) not a sheaf was in stack till the day before, and on some farms, the *very day* on which the rainy weather set in.

The frequent recurrence of such years as this will teach the value of even a fortnight better than anything that can be said here. And that they will recur is beyond a doubt. What has happened *once* may happen again, but what has frequently happened (as this sort of harvest has), with the same causes in operation, we are warranted in saying *will* happen again and *often*.

3rd. The *saving in securing* the crop is a double one. In the first place, there is less waste in moving or reaping, and no danger of "shaking" or "necking" in strong winds. In the second place, there is an absolute economy in the expense of reaping the crop, which may be thus illustrated.

The busy period of harvest with the farmer generally extends over four or five weeks. In this month a certain portion of his work is done by his own hands, *i. e.*, by the regular labourers and servants of the farm; therefore, by beginning a fortnight sooner, and extending the season of harvest over six weeks instead of four, it is evident that these regular servants would cut a much greater proportion of his crop—in fact *one-half more*. By this he is rendered less dependent on those extraneous "*helps*" or "*takers*" who, in the seasons of hurry and anxiety, fix their own terms.

How often do we, especially in the north, behold a force of reapers in almost every field. The reason is this: the wheat, oats, and barley, are often ripe at one time, and aware as the farmer is of the injury which strong winds and showers would do them, he has to hunt up labourers at any price. And, after all this extra expense, it is extremely probable that, having the whole of his harvest upon his hands at once, he is compelled to let some part of his grain have *too little* or some *too much* weather. By commencing his wheat harvest a fortnight earlier, these evils would have been prevented; by the time that his barley and oats were ready, most or all of his wheat would have been cut, and some of it fit for the stack, and that, too, by the exertions of his regular workmen only. And being neither pressed for time nor labourers, his harvest would have been finished at a less expense, and his grain secured very probably in a much better condition.

To assign a value for these advantages is, as has been said before, for *the farmer himself;* and it will not be an insignificant one. For if beginning harvest a fortnight earlier enables him to save a crop from spoiling once in a lifetime—if the improved quality of his straw as food for his stock allows him to plough out an acre more, or to pasture another acre of clover with feeding stock, instead of mowing it for his lean stock, every *grain saved, every extra bushel of corn produced, and every extra head of stock fed,* is a benefit to the whole community as well as to himself—is so much added to the gross produce and wealth of the country. There being, in fact, an *increased return without an increased outlay.*

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[*] "Green crops, or any kind of fresh vegetable matter, require *no preparation to fit them for manure.*

"All green succulent plants contain saccharine or mucilaginous matter, with woody fibre, and readily ferment. They cannot, therefore, if intended for manure, be *used too soon* after their death.

"When green crops are to be employed for enriching a soil, they should be ploughed in, if it be possible, when in flower; for it is at this period that they contain the largest quantity of soluble matter, and that their leaves are most active in forming nutritive matter." Sir H. Davy, Agricul. Chem., p. 264.

[†] "Vegetable manures, in general, contain a great excess of fibrous and insoluble matters, which must undergo chemical changes before they can become the food of plants. It will be proper to take a scientific view of the nature of these changes, &c.

"If any *fresh vegetable matter*, which contains *sugar, mucilage, starch, or other of the vegetable compounds soluble in water*, be moistened and exposed to air, at a temperature from 55° to 80°, oxygen will soon be absorbed, and carbonic acid formed; heat will be produced, and elastic fluids, principally carbonic acids, gaseous oxide of carbon, and hydro-carbonate, will be evolved; a dark-coloured fluid, of a slightly sour or bitter taste, will likewise be formed; and if the process be suffered to continue for a time sufficiently long, nothing solid will remain, except earthy and saline matter, coloured black by charcoal.

"*In proportion as there is more gluten, albumen, or matters soluble in water*, in the vegetable substances exposed to fermentation, *so in proportion*, all other circumstances being equal, *will the process be more rapid.*" Ibid, p. 257.

[‡] "*Mucilaginous, gelatinous, saccharine, oily, and extractive fluids*, and solution of carbonic acid and water, are substances that, *in their unchanged states, contain almost all the principles necessary for the life of plants.*" Ibid, p. 256.

THE TURNIP QUESTION.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—As the season for sowing turnips is arrived, we ought now to take advantage of any improvements or knowledge elicited by the discussion on the subject, which has been going on during the last year in your columns. It is hardly fair that one who has been a witness in the cause, should assume the office of either judge or jury; but having waited in vain to see if some more influential party would sum up the evidence, I am induced to do so, rather than it should remain scattered through so many pages of the *Express*.

Mr. Matson is entitled to the credit of having originated this discussion. At the Smithfield Club meeting in 1839, he stated that he could and did grow from 40 to 45 tons per acre of Swedish turnips, clean topped and tailed; and great praise is due to him for the candour with which he gave to the meeting full information on the mode of cultivation by which he was enabled to grow such large crops. I was present at this discussion, and making every allowance for improved cultivation, it yet appeared extraordinary that a crop of turnips should be grown double the weight per acre of what was considered a great crop in many turnip-growing districts. The majority of persons present appeared to be of a similar opinion, for, in alluding to the discussion in your paper of the 16th Dec., 1839, you say, "After a lengthened and very interesting discussion, it appeared to be the opinion of most of the persons present, that the system of cultivation adopted by Mr. Matson was excellent, and that he had by great pains-taking attained a high degree of perfection in the quality of his roots; but that the extraordinary weight per acre was in a great measure to be ascribed to the quality of the land; and that in ordinary cases, even with good management, not more than from twenty to twenty-five tons per acre could be calculated upon."

In the *Express* of the following week, a correspondent from Suffolk states that "we have Swedes this year weighing 10lb., and upwards of thirty tons per acre," &c. This, I think, may fairly be taken as the medium between the light and heavy weights. In summing up the evidence, therefore, as to the practicability of growing such great crops with the best *field* cultivation, I shall range the statements above and below that weight separately. They will stand thus, taking them in the order in which they are published.

1839. ABOVE 30 TONS PER ACRE.

First, Mr. Matson stating that he has grown 45 tons, and offering for a wager to grow 40 tons per acre.

Dec. 30.—Mr. Scougall, in proof of the value of autumn cultivation for turnips, states that he grew 34 tons 2 cwt. of Swedes from land so prepared; when in the same field, with the usual spring tillage, he grew only 25 tons 14 cwt. per acre.

1839. BELOW 30 TONS PER ACRE.

The majority of the evidence at the discussion in Cavendish Square, on the 14th Dec., was to the effect that from 20 to 25 tons was a very heavy crop.

I may add on this side, that Mr. Scougall states 25 tons 14 cwt. per acre was *more than an average crop*, and not inferior to any in the district.

The subject rested till the 20th January, when, fearing it should drop, I addressed, through the *Express*, a request to Mr. Matson that he would oblige the public, through the same channel, with an account of his mode of cultivation, which he obligingly complied with on the 3rd and 17th Feb., without in any way shrinking from the quantity per acre he had previously named; but backing it up with an offer to bet 50*l.* that he would produce 40 tons per acre the very next crop, and on land that had been ploughed for 100 years. I give the dates of communications, as they may be useful to those of your subscribers who preserve their copies, and who may wish to refer to them.

Throughout the summer nothing is heard of the subject as regards weight per acre, although there are several communications regarding the weight of individual turnips; but on the 30th of November I find three gentlemen, Messrs. Sandon, Anderson, and Dickson, of Northill, in reply to a challenge of Mr. Matson's, stating their belief that "it is utterly impossible for any one to grow 40 tons per acre imperial measure, on a large scale." And in the following week, Dec. 7th, Mr. Matson, referring to this assertion, states that a neighbour of his "offers to bet fifty sovereigns that he will grow next year 40 tons upon a statute acre of land." In the same communication Mr. M. gives us some data by which to judge of the quality of his land, in the account of four successive crops, viz., in 1837, forty-two tons per acre of Swedish turnips; 1838, ten qrs. of wheat; 1839, upwards of ten qrs. of beans; and in 1840, eight qrs. of wheat!—twenty-eight qrs. of corn and forty-two tons of root in 4 years. On the 21st Dec., a letter of mine on the same subject, copied from the *Bury Post*, and followed up by notice in the leading article of the *Express*, again drew attention to the subject, and from that time there is no lack of evidence on either side.

1840. ABOVE 30 TONS PER ACRE.

Dec. 28.—At the annual meeting of the Chippenham Agricultural Society, Mr. Long stated that in Scotland it was no uncommon thing to grow 60 tons per acre of turnips.

Jan. 4, 1841.—Mr. Matson renews his offer to bet 50*l.* he will grow 40 tons per acre in the present year.

And Mr. Alex. Ogilvie, of Mere, in Cheshire, states "that he has frequently had *upwards* of 40 tons per *statute* acre, exclusive of tops and tails;" and further, that "This year he had on one field of about six acres, upwards of 43 tons to the statute acre; and many of the turnips weighed from 13lbs. to 16lbs.

Mr. Ogilvie very properly authenticates his statement by a reference "to the inspectors, and books of some of the agricultural societies in his neighbourhood." In the same number is an extract from the *Wexford Independent*, that 30 acres of yellow Scotch turnips on the estate of Anthony Cliffo, Esq., averaged a yield of 50 tons per acre.

Jan. 11.—"A Lancashire Agriculturist" gives the weights of several crops exhibited for premiums in that county, all between 30 and 40 tons per acre; and Mr. James Esam, a member of the Carlton on-Trent Farmers' Club, offers a wager that he would this year grow 50 tons per acre of white globe turnips.

Jan. 18.—An authenticated statement from Mr. James Gordon, of Aberdeen, of several crops carefully weighed, amounting respectively to 46, 52, and 54 tons, and one to 66 tons! but it does not appear that the tops and tails were deducted.

BELOW 30 TONS PER ACRE.

Jan. 18.—From this week's paper I have an opportunity of quoting Mr. Matson against himself.

In reply to Sir J. M. Tylden, who enquired, "How many acres of turnips do you generally sow? and what do you consider to be the general average grown?" Mr. M. answers, "from ten to twenty acres; and I consider the average produce per acre to be from twenty-five to thirty tons."

Having at this period just finished carefully weighing a crop of my own, grown on good land, with the best cultivation I could give it, I sent the details to the *Express*, by which it appears that 25½ tons per acre was the greatest weight; and in the same field, with different seed, only 19½ tons; the former Skirving's, the latter Matson's.

Jan. 25.—A correspondent signing himself "An Experimentalist," gives an account of a crop, averaging from 23 to 28½ tons per acre. And another, "Handhoe," states, that a good crop, which was *estimated* at from 20 to 40 tons, was found to be only 23.

ABOVE 30 TONS PER ACRE.

Feb. 8.—"An Irish Farmer" gives the weight of three fields, one of which amounts to 35 tons per imperial acre.

BELOW 30 TONS PER ACRE.

Feb. 8.—Mr. George Gower, of Dilham, on good land, well cultivated, grew on flat work, 15 tons 10 cwt.; 27 inch ridges, 16 tons 2 cwt.; 24 ditto, 18 tons 2 cwt.

ABOVE 30 TONS PER ACRE.

Feb. 15.—This number contains an account from Mr. Alex. Ogilvie, of the mode of cultivation by which he obtained the large crop mentioned above (Jan. 4th), and he further states that during eighteen years he has not missed a crop, and believes the lightest crop he has ever had during that period, has exceeded 36 tons per acre.

Feb. 22. — A correspondent from Monmouthshire states, that the field of turnips which won Sir C. Morgan's prize last Christmas, weighed 34 tons 6 cwt. per acre.

In the same paper, Mr. Scougall, whose evidence is quoted above, says that his "crop for 1840 has proved superior in weight to that of 1839, being as high as 42 tons per statute acre, without any uncommon or expensive mode of cultivation;" "and part of a field produced at the rate of 46 tons per statute acre."

BELOW 30 TONS PER ACRE.

Feb. 22.—The same correspondent gives an account of his own crops, the heaviest of which weighed 25 tons.

March 1.—An anomynous correspondent from East Lothian, furnishes a certificate from a surveyor of the weights of several crops of Swedes from three different parishes; they vary from 22 to 28 tons. The writer doubts if 40 tons per acre can be grown any where; certainly not, he says, in East Lothian, which county will not average 20 tons per acre.

This closes the evidence on the subject—the remarks accompanying which could not, for want of space, be inserted. I have, however, carefully reperused the whole, and without being sufficiently converted by the strong testimony offered in favour of some of the heavy crops, as to think that such will ever be grown on an extended scale; it is yet impossible to doubt, that on some soils and with peculiar cultivation, much greater crops have been and oan be produced, than many farmers are aware of. This being the case, there is ample inducement for all those who have been satisfied with their present crops, to endeavour to grow more. Much, Sir, as your paper has been filled with evidence of the weights of crops, I yet think it would be both useful and interesting to devote more of its columns to the method, and above all to the *expense* of growing these very heavy crops. The Monmouthshire correspondent (Feb. 22) sets a good example on this point, as he gives the weight of turnips from several different quantities of the same manure (bone-dust), in the same field. Again, in the time of sowing there is a great variation. In the experiment alluded to in my communication (18th Jan.), the turnips were sown the third week in June; as I have always found if planted earlier they suffer from mildew: but Mr. Skirving has since informed me, that he is convinced I should have had several tons per acre more if I had sown a month earlier; and in a communication to me, dated the 13th April, he says that he was then selling Swedes perfectly sound which had been sown that time twelvemonth.

But of still greater consequence than the proper time for sowing, is a proper selection of seed. In my experiment I proved a difference of six tons per acre between two kinds grown in alternate rows, and I am perfectly convinced that sufficient care is not taken in growing the seed; whether it be in the selection of roots to plant out, or in the situation, avoiding intermixture by bees from other sorts growing near.

The visitors at the Liverpool Meeting will have an opportunity, I understand, of seeing some of these heavy crops, certainly not forward enough to weigh, but sufficiently so to see if they promise to be better than what they themselves grow; and I also understand from Mr. Skirving, that he will be enabled to show a great many different kinds growing together; and perhaps after such an inspection, the subject would not be considered too hacknied for discussion at the British Farmer's Club.

Apologizing for the length to which my remarks have extended, and for the haste with which they have been written,

I am, Sir, yours, very truly,
RUSTICUS.

TURNIP SEED.

SIR,—All agriculturists desirous of protecting the growth of turnip seeds, must feel obliged to your correspondent for his novel communication regarding the saving it by means of kittens, which in all reason must be the most certain and least troublesome mode yet tried. But a great want exists now in ascertaining to a certainty, that the seed bought from the seedsman is not only of a pure and unmixed kind, but that the roots from which it was grown were property selected; since from the seed of such alone can any one expect, even under the best culture, to raise a heavy good crop. I lately saw a patch of odd looking plants coming into flower, the roots of which were not above 5 inches long, and 2 or 3 in diameter; and on asking the owner what description of plant it was, he said Swedish turnip for seed. Now it is well known that the mode adopted by Mr. Skirving of Liverpool, in raising his truly valuable kind of Swede, was solely by selecting for many years the very best roots from his crops, and thus at last coming nearly to perfection. None but the largest, best-shaped, shortest-necked, most singly rooted plants, are allowed by Mr. Sinclair to remain for seed; and all seedsmen ought to be most particular in seeing that those from whom they purchase their seed, have not grown it by indiscriminately leaving a part of their crop on the field, without selection, and throwing away all small and ill-shaped roots. I truly pity the farmer who obtained the seed which I saw growing, and now describe; for with the greatest skill and care I defy it to produce a heavy crop, and the loss is of course attributed to some false imaginary cause; perhaps to bone-dust, which I heard lately produced a crop of turnips which killed the sheep of a friend who tried it for the first, and he vowed the last time. Joking apart, I seriously call the public attention through your widely circulated columns to the great advantage of knowing what care has been taken in selecting the turnips intended for seed; and I am,

A Northern Farmer.

Essex, May 20th. F. A. Mc K.

TIMBER—SALT.

1.

Return to an Order of the Hon. the House of Commons, dated 12th May, 1841, for an Account of the Number of Loads of Fir Timber imported into the Ports of Liverpool and Gloucester, from any Ports of Prussia; distinguishing what is imported in British, and what is imported in Foreign Ships, from the 5th day of January, 1840, to the 5th day of January, 1841.

	Quantity of Fir Timber imported into Liverpool and Gloucester from Prussia, between 5th January, 1840, and 5th January, 1841.		
	In British Ships.	In Foreign Ships.	Total.
	Loads.	Loads.	Loads.
Into Liverpool..	415	2,743	3,158
Gloucester .	....	1,881	1,881
Total	415	4,624	5,039

William Irving,
Inspector-General of Imports and Exports.

Inspector-General's Office, Custom House,
London, May 14, 1841.

2.

An Account of the Quantity of Salt Exported from the Ports of Liverpool and Gloucester to any Ports in Prussia; distinguishing what is Exported in British, and what is Exported in Foreign Ships; from the 5th day of January, 1840, to the 5th day of January, 1841.

	Quantity of Salt Exported from Liverpool and Gloucester to Prussia, between the 5th Jan., 1840, and the 5th Jan., 1841.		
	In British Ships.	In Foreign Ships.	Total.
	Bushels.	Bushels.	Bushels.
From Liverpool..	26,120	865,100	891,220
Gloucester	......	55,680	55,680
Total	26,120	920,780	946,900

William Irving,
Inspector-General of Imports and Exports.

Inspector-General's Office, Custom House,
London, May 14, 1841.

ENGLISH AND FOREIGN CORN.

TO THE EDITOR OF THE CUMBERLAND PACQUET.

Sir,—I observed in your paper of the 11th inst. a letter addressed by a Brigham correspondent on the all-engrossing subject of the corn laws, by which he has attempted to prove, and succeeded in so doing, that the fixed duty of 8s. per qr. upon wheat, proposed by her Majesty's ministers, is in fact no protection whatever to the English corn grower; but as I think your correspondent has not sufficiently entered into detail, I venture to forward you a calculation I have made of the cost of producing a succession of crops in a regular course of husbandry, which is the fair and proper way of discussing the subject. I do this, not with the idea of instructing my brother agriculturists, but to convince the mechanics and persons employed in manufacture of the gross injustices attempted to be imposed upon us. I will begin with the oat crop, and suppose the quantity of land under cultivation to be one acre, it will cost the English farmer as follows:—

OAT CROP.	£	s.	d.
Ploughing out of Lea	0	10	0
Harrowing........................	0	2	0
Seed, 1½ bushel at 10s...............	0	15	0
Sowing and fencing..................	0	3	0
Shearing 12s., and attending stooks till dry 3s..........................	0	15	0
Carting and stacking	0	8	0
Housing stack, thrashing, and marketing	0	12	0
Rates	0	3	0
Rent	0	0	0
Tithes..............	0	5	0
	£3	13	0

WHEAT CROP.	£	s.	d.
Fallowing 5 ploughings at 7s..........	1	15	0
Harrowing 5 times at 2s...............	0	10	0
Lime, 10 carts at 5s..................	2	10	0
Spreading ditto......................	0	4	0
Carting manure.......................	0	10	0
Spreading ditto	0	2	6
Seed 1 bushel........................	1	6	0
Sowing and fencing	0	3	0
Waterfurrowing and cuts	0	3	0
Shearing 12s., and attending stooks till dry 3s.........................	0	15	0
Carting and stacking	0	10	0
Housing, thrashing, and marketing	0	15	0
Two years' rates	0	6	0
Two years' rent......................	0	0	0
Tithes...............................	0	12	0
	£10	1	6

BARLEY CROP.	£	s.	d.
Ploughing and harrowing 3 times at 8s.	1	4	0
Seed	0	12	0
Sowing, fencing, and rates	0	6	0
Shearing 12s., and attending stooks till dry 3s..........................	0	15	0
Carting and stacking	0	8	0
Housing, thrashing, dressing, and marketing	0	18	0
Grass seeds and sowing	0	12	0
Rent	0	0	0
Tithes...............................	0	5	0
	£5	0	0

By this treatment the land will be impoverished rather than improved, inasmuch as it ought to have had manure and top-dressing, when laid down with barley. In order to convince the mechanic and manufacturer of the injustice and absurdity of their cry that "landlords must reduce their rents," I have not charged any rent at all, although I confidently submit that from 30s. to 40s. an acre is no more than a fair rent for land producing the crops mentioned below.

Now, Sir, you will find by the above calculation, allowing the oat crop to be 12 bushels per acre, the

Winchester bushel has cost the English corn grower 2s. 0½d., which can be brought to this country and sold, including the duty, for a much less sum.

Taking the wheat crop at eight bushels per acre, it costs the English farmer 8s. 4d. the Winchester bushel, and foreign wheat of the best quality was last week brought into Whitehaven, paying the present duty of 23s. 8d. per qr., and sold for 8s. 8d. the Winchester bushel:

Allowing twelve Carlisle bushels an acre for barley, it costs the English farmer 2s. 9¾d. the Winchester bushel, and the same quantity of foreign barley can be brought to our market and sold, including duty, for infinitely less than the sum it costs the home grower.

Thus it will be readily seen, that by the proposed ministerial reduction in the duty on foreign grain, the British corn grower is as effectually deprived of everything in the shape of protection as though the duty on foreign grain was entirely abolished,—because, with the proposed reduction of the duty, the untaxed foreign grower could clearly bring grain into our markets and sell it with profit at a lower price than the over-burthened English farmer could grow it, even if the land were his own, or held by him rent free. Therefore it is idle to speak of the necessity of the landlord for reducing the rents of his farmers to enable them to compete with foreign growers, because, as we have stated, they could not compete with them, under the proposed reduction of duty, even if they paid no rent at all. In order to show this, I have charged nothing for rent in the items of cost per acre for cultivation ; and the calculation is moreover made from the very best land in the county, which makes it as favourable as possible for the English farmer ; and yet even under these advantageous circumstances, competition between him and the foreign grower would not only be positively ruinous, but absolutely impossible. Therefore, should the absurd and ill-advised ministerial proposition be brought into operation, (which I think, for a thousand reasons, is extremely improbable,) we must at once become the supplicants of foreign nations for bread, and we may bid farewell to our agricultural greatness. By far the most important interest in the empire will be thus destroyed, and let not our manufacturing and commercial men lay the flattering unction to their souls that other interests will long survive it. The wealth that leaves the shores of this island for foreign bread will enrich rival nations—will encourage them in manufacturing and commercial speculations — and famished England will behold, when too late, that she has become the impoverished dupe of successful rivals, called into existence by her own folly, and encouraged in their ruinous rivalry by British capital sent to them for bread, which could have been supplied at home. Nothing can be more mischievous or more wicked than the promulgation of the doctrine, that foreign nations in return for their grain will take our manufactures—the notion is ridiculous—they would encourage their own manufacturers, which past experience has clearly proved : they will take nothing but gold in exchange for their corn now, and they will become still more imperative on this point in proportion as they find us dependent upon them for our supplies.

I am, Sir, yours, &c.,

Bassenthwaite, May 29th, 1841. AGRICOLA.

PATENT REVOLVING SAFETY STIRRUPS.— It has probably been noticed that we have recently advertised these elegant and patented stirrups, which are designed to obviate the liability of accidents occurring to persons thrown from a horse, by their being dragged along the ground, rough or uneven as it may be, owing to their foot being retained in the stirrup. All danger of the foot being held in the stirrup, after a fall, is obviated by this contrivance, which renders it impossible for the foot to get firmly fixed. The patentee is Mr. B. J. Bromwich, surgeon, of Clifton upon Teme, known, we believe, for other ingenious inventions.— *Worcestershire Chronicle.*

BECCLES FARMERS' CLUB.

SECOND ANNUAL REPORT.

In presenting the second annual report of the Beccles Farmers' Club, your committee would observe, that the experience of another year has not diminished the favourable opinion of the advantages, which, it was anticipated, would result from such institutions. As a proof of this, they would notice the rapid extension of these societies, not merely in this district, but in almost every part of the kingdom ; and as a criterion, that success has not depended on the novelty of the thing, they would point to the increasing numbers which have attended the discussions of this club, and also to the additional members who have been elected into this society during the past year. The number of members now amounts to one hundred and forty.

Your committee have endeavoured to lay before you, in as concise a manner as possible, with a due regard to the proper understanding of the subjects, the heads of the arguments which have been urged, and the resolutions which have been passed, on the several matters which have occupied the discussions of the club during the past year.

They would suggest, however, that the mere drawing up such arguments and resolutions in the form of a report, and printing them for the purpose of circulation, will not be available to any purpose of utility, if the matter is to terminate there. To prove of any advantage to the members they ought to be carefully re-considered, to be compared with the arguments which have been offered, and the resolutions which have been arrived at by other clubs on similar matters and laid before the public ; and by these means, more easily than by any other, will deficiencies in the management of this district be observed, and the improvements in the practice of other agriculturists be ascertained and adopted.

Another source of information may be noticed, which is afforded by these discussions and reports. It will be observed, that on a question, which formed the subject of inquiry during the past year, and also on one or more during the preceding, no conclusion was arrived at, from the defective information which the members confessed, that they possessed on the matter. The question alluded to in the past year is, "The best mode of laying out capital on land, whether by artificial manure, or by giving artificial food to sheep or cattle." It cannot fail to excite great surprise that, on so important a point, a deficiency of information should prevail ; that men engaged, as many are, in expending a large outlay of capital on one or other of these methods of improving the farms which they occupy, should have hitherto drawn no conclusion on their comparative advantages, and should have conducted their business on such loose principles, that they cannot afford good and sound reasons for the adoption of either the one or the other, must be a matter of astonishment to all. The attention which has been drawn to the subject cannot fail to call forth a far more careful and exact consideration than has heretofore been given to it. Your committee do not hesitate to assert that they believe more practical benefit will arise from such discussions as the one here alluded to, where the want of sufficient knowledge is proved and admitted, than from that of any matter which is thoroughly understood. The first step to rouse men to endeavour after improvement is to prove to them their deficiencies, and when once satisfied of these, it will not be long before they will exert their energies to remedy the defect.

The questions which have formed the subjects of discussion are few; but when it is considered that at two meetings, that in August and the annual meeting, there were no discussions, and that some of the subjects which had been proposed, required much consideration, the smallness of the number is easily accounted for.

The attention of the club, at the commencement of the year, (June) was directed to "The most approved method of keeping sheep."

It was suggested that this should be divided into two heads,—keeping them on heavy and light soils; and the arguments were again divided with reference to keeping them for the purpose of breeding or fattening. The principal part of the discussion related to carrying them through the winter months and the early portion of the spring. It was stated that for a breeding flock on heavy land, cut hay or pea straw (if well harvested) given to them in yards, with a small quantity of turnips and some pollard being mixed with the chaff, would be sufficient for them through the first months of winter. As the lambing season approached, more roots would be necessary, a supply of Swedish turnips or mangel-wurzel being provided against that period. For early spring feed winter barley was strongly advocated, in preference to rye, on this description of soil. After this was consumed, tares grown on the lands intended to be fallowed, would afford a seasonable supply; and it was urged that the usual custom of feeding them without severing ought to be abolished, and that the tares should be cut and given in racks or cribs. By this method it was asserted that a large proportion of breeding sheep might be kept on every heavy land farm, even where the largest part of it was retained in cultivation: an instance was cited where an ewe to the acre had been thus provided for.

For fattening sheep on this land, it was recommended that they also should be kept in yards, giving them a full supply of roots and some cut hay and corn, and increasing the quantity of corn, or substituting oil-cake for it, as the spring advanced. Tares, as before, should be ready for them when they are taken from the yards.

On light soils a breeding flock, during the early part of the winter, should be allowed the range of the stubbles and pastures during a few hours of the day, and should be folded on turnips closely and regularly, in order to effect an equal distribution of the tethe on the land. Hay or pea-straw should be allowed, and a larger supply of them during the wet season. Just previous to lambing it would not be desirable to fold them so closely. The quantity of turnips should be increased and the sheep kept entirely on the land. Swedes and mangel-wurzel should succeed the turnips until the rye is fit for use. Fattening sheep on this soil, should have all the turnips they can fairly eat; the Swedes being reserved for the spring; to which, some however preferred the mangel-wurzel. Corn or oil-cake should be given in addition, if an early return be desired. It was contended by some members that it was advisable for this description of stock, to cut the roots and to give them in troughs, not only for the purpose of economizing the food, but also to prevent the sheep swallowing so much sand or grit, and that by doing so, fewer deaths would occur. It was stated, that on black sands, where formerly a great number died while consuming the turnips on the earth, since the adoption of this plan, hardly any were lost. To this it was objected that no saving in the food would be effected by the system, and therefore it was only necessary on a certain description of land. After a lengthened discussion, which occupied this and a subsequent meeting, the following resolutions were adopted :—

Resolved,—"That on heavy land breeding sheep may be kept advantageously in yards during the winter upon a small quantity of roots and cut hay (pea straw being substituted in case of a scarcity of the latter;) the roots to be increased towards the lambing season, and winter barley to be grown for early spring feed. Fattening sheep may be kept in a similar manner, but with a larger supply of roots, and the addition of corn or cake to the chaff in spring."

"That on *light lands*, during the winter, a breeding flock should be closely folded on the turnips, giving them hay or pea-straw, as above; as the time of lambing approaches the fold should be more extended, and on this soil rye should be sown for the spring. Fattening sheep on this land should have the same food as mentioned in the prior resolution for stock of this description; but should be allowed to consume their food on the land, and not in the yards, and should not be too closely confined by the hurdles."

On account of the commencement of harvest, the meeting on the 12th of August was so thinly attended, that no discussion was entered upon. At the next, "The best mode of making and preserving manure," engaged the notice of the club. It was stated, that little attention in general was paid to the formation of the yards, and that many of them were so placed as to allow the better parts of the manure to escape by drains. It was recommended that the surface of them should be rendered as nearly level as possible, and be sunk about nine inches below that of the adjacent land, afterwards covering it with three inches of sand on clay soils, and the same depth of clay or loam on light. The necessity of carrying off all the water from the buildings, by troughs, was strongly urged, as, if allowed to fall into the yard, it would not only carry off the most valuable properties of the manure, but cause the litter to be too speedily trodden down. In putting straw or litter into yards, care should be taken that it be evenly and regularly spread, and not thrown down in large quantities at a time. The feeding troughs ought to be frequently moved, in order that the whole of the straw may be equally trodden by the cattle.

With regard to preserving the manure, the same member considered that it should remain untouched until within a month of the time at which it was required to be applied; when it should be thrown into heaps, and a slight fermentation allowed to take place. He proposed the following resolutions :—

"That it is the opinion of this meeting, that farm-yards generally are injudiciously formed for the purpose of making manure; inasmuch as the liquid parts are allowed to escape by drains, thereby deteriorating the quality of that which remains. That, although a small portion of water may be necessary to facilitate the making manure, when it is required to tread down large quantities of straw or rushes in a given time, yet as a general principle, it should be excluded as much as possible, as tending to make the manure too rapidly and to cause an exhaustion of the liquid parts by draining.

"That to preserve the manure when made, it should be allowed to remain undisturbed in the yard until within a month of its being carted on the land; at which time it should be turned up in heaps in the yard."

To the first resolution little objection was made, except in its being contended that a better system would be to place the cattle (with the exception of horses) in loose stalls under cover; by such means all rain would be excluded, and no greater quantity of straw would be used than the dung and urine of the cattle required. The manure would therefore be of first-rate quality. It was thought that the expense of the necessary buildings, which was greater than would be generally allowed by the landlord, was an obstacle to this method. In opposition to the second resolution, it was urged, that if the manure were allowed to remain in the yard for any length of time, after the cattle had been taken out, by being exposed to the rain and atmosphere, decomposition on the surface would be rapidly going on, so much so, that in time it would become so soft as to make it difficult for any one to walk across it. A better plan would be to cart it on a heap soon after the cattle have left the yard, and by treading it and putting a thick layer of mould upon it, effectually prevent any rapid fermentation taking place. The first resolution was adopted, and in lieu of the second, the following amendment was carried:—

Resolved,—"That to preserve the manure, the best mode of proceeding is, soon after the cattle have left the yard to cart it on a heap, (the loaded carts passing over the same) and to cover it with earth and not to turn it over more than three weeks before it is necessary to apply it."

The subject next proposed, was "The best means of preparing land for wheat;" and on this, with exceptions as to a few particulars, the members were unanimous. Early ploughing, and allowing the land to lie for some time in this state previous to depositing the seed, were acknowledged by all to be most desirable. The exposure of the land to the influence of the atmosphere, would tend to render it very firm, and would operate in a great degree as a preventive against the depredations of the worm. This object would be materially assisted by heavy rolling, to be repeated if at all necessary; the general feeling being that the land cannot be in too solid a state prior to drilling, and that the plant of wheat cannot fail of being injured by frost if the furrows lie at all hollow, or have vacancies underneath them.

Whether it were advisable to work pea or bean stubbles, principally on heavy lands, previous to ploughing for the crop; some difference of opinion prevailed. Where the land was foul with weeds, or root grasses, this was deemed necessary by some; but on the other hand, it was agreed that such a process would cause the wheat in the ensuing summer to break down, or become knee bent, or root fallen, and that one early ploughing was to be preferred.

A member stated that the following circumstance occurred to him in the course of his experience. Part of a field, liable to be injured by the worm, was ploughed for wheat in the harvest, leaving alternate stetches, or ridges, untouched. Into these last the ploughs did not enter till just before the period for sowing had arrived; the land was all drilled with a like quantity of seed and at the same time. The result was, that while the early ploughed escaped, the latter was greatly injured by the worm, and the produce of the one was fifteen bushels per acre more than of the other. Shallow ploughing was considered preferable, especially if manure were applied. The meeting came to the following conclusion:—

Resolved,—"That it is not desirable to work pea or bean stubbles as a preparation for wheat; but in some cases breaking up and working trefoil stubbles has been found advantageous on a certain description of land, not of too light a quality. That early ploughing, succeeded by heavy rollings and allowing the land to lie a considerable time prior to sowing that it may become stale and settled by the rains, is the most desirable preparation for that crop."

"The particular crop to which the yard manure of the farm ought to be applied," came next to be considered. The member who had proposed the question, remarked, that the peculiar advantages of the alternate system of grain and green crops, which was pursued in this district, were, that by the cultivation of the latter, a greater return of manure was obtained, and when applied gave an additional capability of production to the soil. The truth of the Flemish proverb, "No food, no cattle; no cattle, no manure; no manure, no corn," was too evident to be called in question; and the same remark might be applied to the converse of it: "The more food, the more cattle; the more cattle, the more manure; the more manure, the more corn." The great desideratum in good husbandry, was to increase as much as possible the food for cattle, and therefore it would appear that all the manure of the farm, that could be made available, should be applied to the green crops. Some variation might be necessary with regard to different soils, or where a quantity of artificial manure was annually brought upon the farm. It was, however, proposed by Mr. Morton, (a gentleman whose opinion ought to carry with it no little weight,) in his prospectus of the Whitfield example farm, to apply not only the yard manure, but also that which was purchased, to the green crops; and it will be there seen that he has recommended no manure whatever should be carried for grain. This would be greatly benefitted by the manure which had been applied to the preceding green crop, and also by the feeding of the latter on the ground. On heavy soils, where the raising of roots is at all times a matter of difficulty, it could not be a question but that they should be forced, as much as possible, by a bountiful application of manure; and whatever was not used for this crop, or was made, after the period for sowing it, had passed, would for no crop afford a greater remuneration than for beans; and for these too large a quantity cannot be applied. Manuring of the young clovers was in many cases hazardous, as the better portion of it was liable to be carried away, and dissipated by the rains of winter; when applied on dry soils it had often been found pernicious, and in a scorching summer more productive of harm than benefit. On this soil, when a quantity of bones, rape-cake, &c., is purchased, this ought to be applied to the root crop, with a portion of the yard manure, and the remainder of the latter to the pea stubbles, or clover leys for wheat.

In opposition to these remarks, it was contended, that on light soils good turnips were frequently grown without manure, especially where it had been laid on for the previous crop of wheat; that a very heavy manuring on this land at one time would, in a dry summer, prove detrimental; and that such a soil, from its weakness would not be able to carry out the crops through the whole course, if the manure were all applied at the commencement of it; and that the wheat crop being most essential to the farmer, from the greater value of its produce, ought not to be neglected in the article of manure. After much discussion on the merits of the different arguments advanced, the meeting agreed as following:—

Resolved,—"That on light land farms, where no artificial manure is employed, the root crop is the most advantageous for which the yard manure can be laid on. That on clay farms, it should be applied to whatever roots are grown; and to the beans and wheat, on those lands which have been long fallowed. And where artificial manure is purchased, that, with a small quantity of yard manure, ought to be applied to the root crop, and the remainder of the latter, to the beans, pea-stubbles, and clover leys, for wheat."

"The best method to be adopted in underdraining land," was the next subject, and afforded matter for more than one evening's discussion; some members having expressed dissatisfaction at the resolutions first passed, a supplementary meeting was called; the resolutions came before the club for reconsideration, and were in a slight degree altered.

The first proceeding recommended, was thoroughly to cleanse the ditches round the field intended to be drained, and to make them of sufficient depth, not only that a free passage might be afforded to the water, but also that the quality of the subsoil might be ascertained. It was considered that the drains ought to be placed across the stetches, care being taken to give the water a sufficient fall: furrow drains being objected to as being thought very liable to be frequently injured by the horses walking upon them when ploughing the whole length of the field. As to the distance at which they should be placed, it appeared to be the general opinion that it must in a great degree depend upon the quality of the subsoil. On strong clays, a greater distance than six yards from drain to drain could not be allowed, while on tender soils through which the water would draw more freely, a greater space might intervene. On land affected by springs, it was necessary to make the drain above the spot where the water rises, and if the spring by these means were deeply and effectually cut off, nothing further would be requisite. A greater quantity than ten score rods of draining should not be emptied by one eye.

The drains should be drawn with the plough as deep as practicable, and the main, or leading ones, dug till they are not less than thirty inches in depth, and the others not less than twenty-eight. Digging the drains with shoulders at the top of the last spade was advocated by some and opposed by others, from the idea that when a broken place in the soil occurred, the sides were liable to fall in and stop the water when the superincumbent earth pressed upon the shoulders. Wheeling the drain, or drawing a cart with one wheel in the drain after it has been partially filled was recommended by others. With regard to the materials to be used for filling the drains, a great diversity of opinion existed; and the more so, as the subject was considered by some members, to relate to the most profitable and practicable mode to be adopted by a tenant farmer, rather than to the best. Various articles were mentioned, as adapted for this purpose; ling, furze, straw bands tightly twisted, wood, bushes turf, sods, tiles and stones. These two last were objected to by some; the former, as being too expensive for a tenant with a short lease, and being very heavy in carriage, when not lying near to the spot to be drained; and the latter for a similar reason, and as not being found in any quantity on the strong land where this operation was most needed. An instance was mentioned, in which a piece of land had been drained with straw bands, and in which the drains had worked well for the long period of twenty-seven years: the subsoil was a strong clay. With regard to the proper formation of the eye, on which so much of the success depends, great pains should be taken to render it effective and durable. A member, who had considerable experience in the matter, stated the following, as the method which he pursued, and which he had found to answer the purpose. The first few yards of the commencement of the drain are dug with particular care; tiles are then laid in and these covered with clay made to the consistence of mortar, in order to fix them securely, and to prevent the water forcing a passage by their side, by which means the soil would be washed away, and room allowed for vermin to enter the drain; a large stone was also firmly placed under the first tile, in order that it might catch the flow of the water, which otherwise would soon wear away the substratum, and cause the tile to fall, and the eye most probably to be blocked. The subject is so important and extensive, that although much time, (altogether three evenings) was spent in its discussion, yet, as many matters were omitted, the draining of pastures, for instance, it must still be considered incomplete. The following resolution will exhibit the opinions of the meeting:—

"That the drains should be drawn as much across the furrows as to give a sufficient fall to the water, and on stiff clay soils they should not be more than six yards apart, and that when tiles or stones can be obtained at a convenient distance they are the most desirable materials for filling up. That when these cannot be procured, except at too great an expense, straw bands, wood, bushes, or ling, (straw being used with the wood or bushes) may supply their place. That the earth from the bottom spade should be placed first on the materials used, and afterwards the furrows which have been turned out by the plough in drawing the drains. That to lands of a broken soil the same remarks will apply, with the addition, that wood with straw, is the only article which can supply the place of tiles or stones; and on these lands the work ought to be performed only at such times as they are in a dry state. That on lands affected by springs, it is desirable to place the drain above the spot where the spring breaks out, and tiles being placed at the bottom, they should be covered for several inches with small stones, taking care at the same time to have the tiles in the leaders of a sufficient size to convey the water. That on all soils great care should be taken in forming the eyes, in order that they may not be worn away by the water, or injured by vermin."

"The most profitable mode of laying out capital on land, whether in artificial manure, or in giving artificial food to sheep or cattle," occupied the attention of the club at the meeting in March. The member who had proposed the question, stated that he was aware of no better means of testing their comparative merits, than by supposing an hundred acres of arable land as placed under each of these systems: the land in a poor state of cultivation, and so situated that it could be improved from no other source than from one of these.

First, with respect to artificial manure. One hundred guineas to be laid out either in rape cake, bones, or any other manure of that description: this he would suppose to be expended on the root and wheat crops; the farm being under the four-course husbandry, this would give, taking rape cake for instance, at six pounds per ton, seven cwt. per acre for the twenty-five acres of roots, and the same for the like quantity of wheat. He calculated that from this dressing, the quantity of turnips would be increased from eight to twelve tons per acre; and in the wheat crop, twenty-nine bushels per acre would be produced instead of twenty-four, and there would be five cwt. per acre additional of straw; the account would therefore stand as under:—

ARTIFICIAL MANURE. DR.	£ s. d.	CONTRA. CR.	£ s. d.
To 17½ tons of rape cake, at 6*l.* per ton..........	105 0 0	By four tons of turnips additional per acre on 25 acres, 100 tons at 12s. per ton..	60 0 0
Profit..............	14 7 6	By 5 bushels of wheat, for 25 acres at 7s. 6d. per bush	46 17 6
		By 5 cwt. of straw for ditto at 2s. per cwt..	12 10 0
	119 7 6		119 7 6

In expending the same sum in artificial food, he supposed ten tons of linseed cake to be bought at ten guineas per ton, and that this should be given in addition to the turnips grown on the land to twenty beasts: by consuming half a ton of cake each, he considered that the beasts would be fit for the butcher eight weeks earlier than they otherwise would have been, and that the manure made by them when thus fed, would be increased in value, eighteen pence per load, allowing also a small additional quantity to be made on account of this consumption. The items would be:—

ARTIFICIAL FOOD. DR.	£ s. d.	CONTRA. CR.	£ s. d.
To 10 tons of Linseed cake at 10*l* 10s. per ton...	105 0 0	By 8 weeks keep of 20 beasts saved at 5s. each per week......	40 0 0
		By additional value of 400 loads of manure at 1s. 6d...	30 0 0
		By additional quantity, 10 loads at 4s. per load......	2 0 0
		Loss...............	33 0 0
	105 0 0		105 0 0

Against these calculations many objections were urged. It appeared, however, that the members were not furnished with sufficient information on the subject to enable them to draw any safe and satisfactory conclusion, and on that account it was laid aside for the present, without coming to any resolutions.

At the last meeting of the club, the subject for discussion was "Artificial Manures." Of these, a great variety were recommended to the notice of the members. The crops to which it was considered that they would be the most advantageously applied were roots and wheat. It was mentioned that great benefit had been derived from animalized carbon mixed with burnt earth, eight cwt. of the former to thirty bushels of the latter, when applied for turnips. Rape cake was recommended as beneficial for that crop and also for wheat. Bones were well spoken of, and it was suggested that they should be mixed with some other manure previous to application—either carbon, or graves, or train oil, as from this mixture they would, in a certain degree, be decomposed and be brought more quickly into a proper state to afford food for plants. It was urged that they were of peculiar advantage to the wheat, as containing a large portion of the phosphate of lime, and that they lasted longer in the soil than any other of the artificial manures. Nitrate of soda was mentioned, but it appeared that some discrimination was necessary as to what soils it ought to be applied. Common salt had been found useful when sown from six to ten bushels per acre. Gypsum, although beneficial in many places, had not been found so in this neighbourhood. After a lengthened discussion, in which much useful information was elicited, the meeting came to the following resolution:—

"That artificial manures may be advantageously used on any soil, and the crops most benefitted by it are turnips and wheat. Bone dust, animalized carbon, and rape cake, are recommended for the former; and rape cake, nitrate of soda, and common salt for the latter."

Your committee have examined the treasurer's accounts, and find that his receipts and disbursements have been as follows:—

RECEIPTS.	£ *s.* *d.*	DISBURSEMENTS.	£ *s.* *d.*
Balance from last year	5 13 6	Books	12 11 1
Donations.......	14 0 0	Stationary and printing......	3 16 6
Subscriptions ..	17 7 6	Miscellaneous expences	0 18 0
		Balance due from Treasurer	20 13 5
	37 1 0		37 1 0

During the past year many valuable additions have been made to the library; among these your committee would notice Professor Liebig's work on Organic Chemistry. But, as the demand for agricultural works was small until the last year or two, they have experienced considerable difficulty in selecting useful and practical works. They would therefore recommend, in the dearth of such publications, that the club should advise to what purpose, connected with the legitimate objects of this society, the balance which is placed at their disposal should be applied.

In closing this report your committee would repeat the observation which they made in that of last year, and would remind you that this society has been formed not only for the purpose of acquiring, but also of diffusing agricultural information. Both these objects must always be borne in mind, and it is matter of no slight congratulation, that while the agricultural class is endeavouring to improve their knowledge and increase, by every available means, their resources, each individual member of it is ready to contribute his amount of experience to the common fund of information, without any invidious rivalry or jealousy of others. Such a circumstance, it is believed, occurs in no other class in the kingdom (the liberal professions excepted), as that of men occupied in one common calling, affording to all others similarly engaged all the advantages which either time, or experience, or observation, or superior ability, may have enabled them to possess. It is a proof, if any were wanting, of their good wishes towards all classes of the community, as well as of their liberality towards each other. If such conduct as this be steadily persevered in, and if societies such as these continue to be formed and extended, and the objects for which they are established be faithfully kept in view, the agriculturists will become, in a few years, a body of men sufficiently versed in the principles, and thoroughly acquainted with the details, of that science in the pursuit of which they are engaged.

For the Committee,

CHAS. CLARKE, Chairman.

AN APPEAL TO THE TRADESMEN OF THE METROPOLIS, BY ONE OF THEMSELVES.

TO THE EDITOR OF THE TIMES.

SIR,—I am aware that your bias has rather been towards the "free trade" side of the question discussed in the following letter. I would hope, however—or rather, I feel assured—that the *present* agitation of the question, with the mere view of propping up an incapable Ministry, must raise your disgust, as it does that of every honourable man. I hope, therefore, that you may be willing to allow the following protest to appear in your columns. It is entirely genuine, being written by a person occupying the station he claims, and it expresses the sincere and unreserved convictions of his own mind.

I give you my name and address as a guarantee on this point, and remain, Sir, yours very respectfully,

R.

BROTHER ELECTORS,—I would address you, in all plainness and sincerity, as one having no interests apart from your own. I possess no land, nor have I any prospect of becoming the owner of any. My capital is embarked in trade; my income is solely derived from that source. I can have no bias, therefore, except it be in favour of those interests which I have in common with you all.

We are now daily beset with entreaties to assist in the warfare carrying on against the existing corn laws. I wish, therefore, seriously to ask myself, and to ask you, whether it be right or wise to join in this warfare. To determine this point, it will be advisable to look both at our own interests, and at those of the community at large. Will you accompany me, for a few minutes, in this inquiry?

The first and most common way of putting the question is, by asking you if you are not in favour of "cheap bread?" With a few very shallow persons this single argument suffices: everybody, they suppose, must wish for "cheap bread."

But such as are not quite so hasty or superficial, do not require to be told that mere cheapness of the necessaries of life does not of itself constitute a state of prosperity. When an Irishman was asked, at a shop in London, sixpence for four eggs, he protested against the extortionate demand. "Why, in Mayo," he exclaimed, "I could have had two dozen for sixpence!" And why, then," he was asked, "did you not stop in Mayo, since you could buy things so cheap there?" "Because," he replied, "I could not get the sixpences to buy them with." This little anecdote shows us the real nature of the question. To all of us, whether tradesmen or journeymen, the main thing is not to be able to buy food cheap, but to have plenty of trade, plenty of work, good profits, good wages, so as to have the means of buying what we want, whether cheap or dear.

Let us look at this point a little more closely. Probably my own case may be like many of yours. If the corn laws were repealed, and bread were thus reduced 2d. or 3d. per loaf, I should probably save, in my household expenditure, some 6*l*. or 8*l*. a year. This would be the whole gain that could accrue to me by the change. One single dull season would do me more injury in six months than the lowering the price of bread would do me good in 20 years. This very spring, in consequence of the stagnation in trade, caused by the late budget, I shall lose at least 300*l*. of my ordinary income. Obviously, therefore, the saving of 6*l*. a year in the article of bread would not repay me this loss in forty years. So clear is it that the mere price of bread is a trifling matter when compared with the far more important question of a good or bad state of trade. But it may be said, that although this may be true of the tradesman who spends but a small part of his income in bread, the case is far different with the labouring man, the greater part of whose earnings are expended on the necessaries of life. The case, however, is *not* different. To the labourer or journeyman, no less than to his master, a steady flow of business, constant work, and good wages, are things of far higher importance than the mere price of bread. To be out of work for a month or six weeks in the year, or to have his wages beaten down by competition, would far more than counterbalance any advantage the working man might derive from a reduction of the price of bread. And if the repeal of the existing corn laws threw many of the agricultural labourers out of work, as it assuredly would, and forced them to flock into the towns for employment, it is quite certain that the competition for work thus occasioned must bring about a great reduction of wages.

In fact, what else is it that the great manufacturers are now aiming at? They are spending thousands upon thousands in agitation; paying scores of fellows to run about the country lecturing and collecting petitions; and what is their object in incurring all this trouble and expense? Does any one suppose that they are spending vast sums of money out of pure benevolence, and merely to make bread cheaper to the poor? Nothing of the sort ever enters into their minds. Their object is to increase their own trade, by being better able than at present to compete with the foreign manufacturer. And how is a repeal of the corn laws to bring this about? Obviously, *by enabling them to reduce wages.* This was explicitly stated by Mr. Muntz, the Member for Birmingham—a sincere and earnest Radical—in the debate of May 17. He said—

"If the corn laws were repealed, the benefit which the manufacturer expected was, that he could produce at a lower price; and this *he could only do by reducing wages to the continental level.*"

We have advanced so far, then, as to see that a reduction in the price of bread would not *necessarily* prove a benefit either to the tradesman or to the labourer. It would do no good to the tradesman, if along with it there came a slackness of trade; or to the labourer, if it were accompanied by a reduction of wages. So much being clear, let us now endeavour to trace the probable working of the change proposed.

It is wished that in future our ports should be at all times open to foreign corn, a small fixed duty being levied. The result, no one doubts, would be the influx of a large quantity of such corn, brought in at lower prices than our own farmers are in the habit of obtaining. This, we must assume, would be the case, or else the change would be utterly useless. Those who advocate it plainly tell us that they expect foreign corn to be brought in in large quantities, and that the result will be, that bread will be *cheaper* than it now is. Let us look, then, at the working of this change. A single million of quarters of wheat is worth, at present, 3,000,000*l.* sterling. Probably, from Poland we might buy and import the same quantity for 2,000,000*l.* We are urged to do this—*first*, because it is said to be common sense to "buy where we can buy cheapest;" and, *secondly*, because if we took our corn from the Poles and Prussians, they might, perhaps, take our manufactures in return. Now, is it not strange, that those who argue that the Germans *cannot* take our cottons and woollens, except we will take their corn in return, do not perceive that the argument applies both ways. If the German cannot buy of you, except you will buy of him, how is the English farmer to buy of the manufacturer, if the latter prefers to deal with a Pole or a Prussian for his corn? Suppose that only a million of quarters of wheat are imported. You have thus deprived the English farmer of your custom, to the extent of 3,000,000*l.* sterling. Our home trade is at once reduced by that amount. And in its room, you have only a chance, a *possibility*, that out of the 2,000,000*l.* which you are to pay the Polish or Prussian corn-grower, he *may* happen to lay some of it out in your manufactures. Meantime, how will the change work at home? Foreign corn at foreign prices, will be brought into our markets, and that in sufficient quantities permanently to reduce prices. This must be what the advocates of the repeal of the existing laws contemplate,—or else their cry of "Cheap bread" would be a mere cheat and an imposture. The price of corn in our markets then would be permanently lowered. Lord Western, an old Whig, and a practical farmer, has shown that in the generality of cases the farmer could not live on the prices that he would then obtain, *even if he paid no rent*. It is clear, then, that a great part of England under these circumstances must cease to be cultivated; and the people now employed in its culture must be thrown out of work and out of bread. And this is not a mere party outcry. Lord Charles Fox Russell, brother of Lord John, said at the Bedford Meeting of the 15th of May—

> "If the protective duties are repealed, 2,000,000 acres of land must go out of cultivation, and *immense numbers of labourers* be reduced to *a state of starvation*."

And a very different man, Mr. Muntz of Birmingham, said, in the debate of May 17—

> "If you repeal the corn laws without making any alteration in the monetary system, *the land would pass out of the hands of the present owners*."

What does this last expression imply? First, that the farmers would be unable to pay their rents, or in short, to cultivate the land at all, so as to compete with the prices of Poland. Secondly, that the farmers being first ruined, stripped of all they had, and forced either to fly the country, or to go into the union workhouses, the labourers would, in the regular working of the system, be thrown out of work in tens and hundreds of thousands. Thirdly, that the land, in most cases paying no rent, and devoured by heavy poor rates, would become of no value to the owners, who would be forced to part with it, either to pay off debts or encumbrances, or in order to realize any means they could of otherwise supporting life.

To say, then that "the land would pass out of the hands of the present owners," is to describe a fearful revolution. But this is not all. Having destroyed the landed gentry and the farmers, what portion of the home trade would remain? Or what recompense would the precarious trade carried on with the continental corn countries make for the loss of a large part of the home demand? And lastly, upon whom would the burden fall of supporting those hundreds of thousands of agricultural labourers who had thus been thrown out of employ? Contemplate, then, friends and neighbours, the whole of this fearful prospect, and ask yourselves what has any one of us to gain by abolishing of the corn laws? If we take the metropolis alone, can we suppose that the tradesmen of London and Westminster, would ever gain as much by a cheapening of the 4lb. loaf, from 10d. to 8d., as they would lose by sending half the aristocracy and landed proprietors to husband their remaining resources in Germany or Italy? Still less can the provincial towns hope to prosper amidst the ruin, alike of the landlord and the tenant, the proprietor and the cultivator of the land. While, for the labourer, whether in town or country, what but misery can await him from a change which deliberately proposes to take the business of growing corn for the people of England out of the hands of English farmers and English labourers, and to give it mainly into the hands of the serfs of Poland.

I feel utterly at a loss, then, to discover what class of the community (except, perhaps, a few large manufacturers at Manchester or Stockport) can be the gainers by taking our custom from the English agriculturist and giving it to continental corn-growers. Nothing can be clearer than that we, the tradesmen of London, shall not; inasmuch as a great part of the trade in London consists in selling to the landed aristocracy who reside in or visit the metropolis, and in supplying the country towns with goods, for sale to the owners and occupiers of the land in their vicinity. Just as certain is it, that the latter, the country towns, must be ruined by such a change; since their prosperity depends upon the prosperity of the land-owners and cultivators of their neighbourhoods. And, both in town and country, the workmen, whether mechanics or labourers, must bear the chief weight of the distress that will arise. If we deliberately resolve to employ some hundreds of thousands of Polish peasants in growing corn for us, nothing can be clearer than that we do thereby resolve that some hundreds of thousands of our own labourers shall be thrown out of work. And the depression of wages which must arise from such a sudden overflow of the market of labour may be in some degree anticipated by looking at the case of Ireland, in many parts of which, owing to the scarcity of work and great number of men seeking employ, the wages of an able-bodied man do not exceed *two pence-halfpenny a day!* In every point of view, then, I consider the withdrawal of the protection given to our own agriculturists to be a proposition the adoption of which would be an act of absolute suicide on the part of an English legislature. And in this belief I ask you, except you can invalidate the above statements, to give no aid to the present attack on our existing corn laws. A LONDON TRADESMAN.

Fleet Street, May 26.

ESSAY ON THE CULTIVATION, FEEDING, &c., OF ROOTS.

(FROM THE BALTIMORE AMERICAN FARMER.)

Having for several years past paid considerable attention to the culture of roots for my stock, the experience which I have thus acquired has enabled me, in each succeeding year, to increase my crops, while the expense of cultivation has been considerably lessened. The flattering success which has attended my efforts in this branch of husbandry has induced me to become a competitor for the premium you propose to award for the best essay on the cultivation, feeding, &c., of roots ; with this view the annexed is therefore offered for your consideration.

I shall in the first place treat of the soil and its preparation. A deep loam is most favourable to the successful cultivation of root crops, as the long tap roots penetrate more readily to such a depth as not to be affected by an ordinary drought; and soils of this character, when highly manured, become so retentive of moisture that root crops, under judicious cultivation, are rarely injured to any extent by the severest droughts, as was evinced by my crop during the great drought of 1837. But no farmer, let his soil be of what character it may, should be deterred from making an effort to raise either the beet or ruta baga for his stock. Deep ploughing, the soil well pulverized, liberal manuring, and judicious after-culture, will ensure remunerating crops upon any soil ; and when he has once had the pleasure of witnessing the improved condition of his animals, the increased quantity and improved quality of his manure, and heard the flattering statements of his wife, touching the improvements of her dairy, he will be goaded on to farther efforts.

Experience, however, has convinced me that entire and uniform success in root culture depends upon many things—each small in itself, but of the greatest importance when taken in the aggregate. I shall endeavour to treat of each in its proper place. In regard to the preparation of the land, much must depend upon the nature and quality of the soil ; a sandy soil or mellow loam would, with one ploughing, be put in finer tilth and better condition for planting, than a stiff clay, or many other soils ploughed at an improper time (either too wet or too dry), with three ploughings and as many harrowings ; let it suffice to say, the soil must be completely pulverized, or it is useless to commit your seed to the ground ; this is a matter very easily accomplished, if the soil is ploughed when in a proper state—seize this opportunity, whether it be earlier or later—harrow while the furrow is yet moist ; if not completely pulverized, apply the roller, and the work is accomplished, and the first important step has been taken to secure a crop.

A clover sward or ley is to be prepared ; first on account of the great quantity of vegetable matter, which will all be decomposed and converted into food for the crop at the time the bulbs are growing most rapidly, which is at a late period in the season (particularly turnips), as it is a fact well known to all turnip growers, that, however luxuriant the foliage, the bulbs do not increase rapidly in size until the nights have lengthened considerably, and become cooler ; but what is more important, the roots of the clover are more evenly distributed through the soil than it is possible to intermix manure or vegetable matter by any artificial process : hence that portion of the soil in the immediate vicinity of the plants, and which cannot after planting be stirred with the plough or any other implement, retains it mellowness, and is kept in fine tilth throughout the season, and of course retains more moisture and furnishes a finer bed for the plants.

The quantity of manure necessary to apply will in a great measure depend upon the richness of the soil. Eight or ten cords of unfermented manure to the acre, on an ordinary soil, is sufficient to ensure a fair crop. Let this be spread and turned under with the plough as early in the spring as the land is in a proper condition for this operation, but the furrow should not be completely inverted ; let them be laid one against another : in this way the manure will be very evenly distributed from the top to the bottom of the furrow. A plough, manufactured by Wiley and Conklin, of Peekskill, N. Y., performs this operation better than any I have seen used. The land should be rolled and harrowed twice or thrice before the season arrives for planting. The seeds of all weeds will vegetate during this period, and be destroyed by the harrow, while the soil will be much benefitted by having a mellow surface constantly exposed to the atmosphere. When the season for planting has arrived, spread upon the land ten or twelve loads (say 30 bushels each) of compost to the acre, which should be prepared for this purpose early in the spring or fall previous ; harrow once to cover the waggon tracks and make all smooth and mellow ; then with a plough throw the land in ridges three feet deep from centre to centre of each ridge. By this operation, the compost which has been spread upon the surface will nearly all be gathered into the ridge, and placed in a situation to come in contact with the roots of the plant in the earliest stages of its growth, and ensure a healthy and vigorous start, which is a matter of much importance. If the preparation of the compost should have been neglected, spread by hand a small quantity of wood ashes (say 10 bushels per acre) upon the centre of the ridge, immediately after the seed has been drilled in. The land should be ridged for two reasons. In the first place it gives a greater depth of soil—an advantage to all tap-rooted plants ; and secondly, it saves much labour in the after-culture, as the elevation of the plant upon the ridge will permit the use of the plough or cultivator (the latter implement I consider the best) between the rows, at a very early period of their growth ; but if planted upon a level surface, the hoe must be used for a considerable time, which is both tedious and expensive.

SEED, PLANTING, &c.

Turnip seed may be planted dry, as they vegetate very soon ; but the sugar beet and mangel wurzel seed should be put in a vessel, and water (quite warm) poured upon them, to remain therein for the space of twelve hours, the water to be changed occasionally so as to be kept warm during the whole time, then poured off, and the seed set in a dark place—they will vegetate much sooner than if left in the water; let them be stirred two or three times a day, bringing those at the bottom uppermost, to keep the moisture equally distributed through the whole mass. When they begin to vegetate, mix a small quantity of ashes or plaster with the seed to absorb the superfluous moisture, and prevent them from adhering to each other; they may then be thrown in the drill and planted, which should, if possible, be done on the same day the ridges are formed; in fact, the sooner after the ridge is thrown up the better, as the newly formed ridge will be sufficiently moist to bring up the seed without the aid of rain. I have frequently had my plants to appear above ground in less than three days after the seed was planted. Another very important advantage resulting from planting on a fresh ridge, or one newly formed, is that the plants attain such size, that the first hoeing and thinning may be performed before the weeds interfere in the least with this operation, by which a saving of 100 per cent. in the labour will be effected. This operation is also much facilitated by an improved hoe which I have used for the last three years—one man performing as much labour as three or four men with the ordinary hoe, and not being in general used, I shall here attempt to describe it:—There is first an eye, in which the handle is to be inserted; to this eye there are attached two prongs similar to those of a hay fork, only larger and much more curved; at the extremity of each of these prongs a small hole is made for a rivet; a very thin blade of the best steel, two inches wide and seven inches long (which is the space between the extremities of the prongs), is secured to said prongs by rivets; the two prongs are so curved that the blade when attached sits considerably inclined in a direction parallel with the handle. With this any ordinary hand may, in a few minutes, be taught to hoe or dress a row of plants with nearly the same facility that he would walk from one end to the other, drawing the implement after him, with the blade kept just beneath the surface—one corner nearly in contact with the plants, thus passing down one side and up the other of each row. This operation should be performed in the forenoon of a clear day, whereby the weeds will all be destroyed before night by the influence of the sun. Another and more experienced hand should follow with a similar hoe to thin the plants, which he will perform by drawing the hoe across the row at regular intervals of twelve inches—the hoe being seven wide, will leave a space of five inches untouched, in which space, if a sufficient quantity of seed has been used, there will remain from two to six plants; the cultivator may then be used between the rows, and if this operation be carefully and skilfully performed, nothing more will be necessary until the plants have become firmly fixed in the soil, when the inferior and superfluous plants may be thinned by hand, the most healthy and vigorous plants only being left. If there be any vacancies, it is better to leave some extra single plants (the plants being left about twelve inches apart) until they have attained the size of a man's finger, when they may be taken up with a sharp stick and transplanted. If this operation is performed when the plants are very small, in nine cases out of ten it will prove a failure; but if delayed until this stage of their growth, they will scarcely be distinguished at harvesting from those not transplanted. If the weeds are entirely eradicated when the operation of thinning is performed, one slight hoeing is all the hand labour that will be required thereafter. The foliage will soon become so dense as to prevent any farther growth of weeds in the immediate vicinity of the roots. The space between the roots may be kept in fine tilth and perfectly clean with a cultivator drawn by one horse. (I use an implement of this kind with a hinge in front, by which it may be contracted or expanded to any width, and as the roots increase in size, it is contracted to suit the space.) In this way, it will be perceived, a crop of roots may be raised with very trifling expense. My crop of sugar beets, the last year, cost four cents per bushel—my ruta baga a fraction less than five cents. In the estimate of cost, I charged fifty cents per load for the manure, which I believe quite enough, as but little more than half the manure is consumed by the root crop. For use of land I charged the interest of one dollar per acre. The farmer should always bear in mind that the old adage, "a stitch in time saves nine," will in no case apply with more force than in the culture of a root crop. Let him seize the earliest opportunity, after the plants have attained sufficient size, to perform the first operation, viz., hoeing and thinning. There may fall a heavy rain, or a continuation of wet weather may render the land too wet to cultivate until the weeds get such firm and full possession, that he will find it almost as tedious and expensive to supplant them as to get a possession through a writ of ejectment in the Court of Chancery.

The preparation, manuring, &c.—in fact all the preparatory process hereinbefore recommended, will apply to all root crops, except in preparing for the potato, slight furrows should be made three feet distant from each other—the potatoes planted (large tubers should always be cut) about twelve inches asunder in the furrow, and covered by running a furrow on each side, forming a slight ridge over them, which may be rolled down as soon as the planting is completed.

The after-culture of the potato must in some measure depend upon the variety cultivated. For instance, the Foxite, the most esteemed variety among us, requires level cultivation (no hills); the bearing roots appear to seek and spread over the whole surface or space between the rows; fine tubers will be found growing or grown from twelve to eighteen inches from the hill, or place where the seeds were deposited.

There are some other varieties, viz., the Rohan, the long reds or La Platte, and Mercer, all grow in a cluster around the stem; the ground is burst open, and as they increase in size, the potato becomes exposed to the sun, &c., turns green, and is rendered worthless; hence with such varieties the quantity is increased and the quality improved by the process of hilling; but this process should be performed soon after the tubers have formed.

(To be continued.)

CORN, CURRENCY, CONSOLS, &c.—Mr. Wyld has just produced another tabular view of these important matters; and also including exports, imports, and annual expenditure, with their relative bearings on each other. It is a very valuable document, and contains more useful information at a short glance than is often contained in volumes. We are left to draw our own conclusions from the facts exhibited.

MANUFACTURES OF THE UNITED KINGDOM.

A COMPARATIVE STATEMENT (CALCULATED WITHIN THE LAST THREE YEARS, FROM 1838 TO 1841) OF THE WHOLE MANUFACTURES OF THE UNITED KINGDOM, AND THE PROPORTION OF MANUFACTURES FOR EXPORTATION TO FOREIGN COUNTRIES, INCLUDING ENGLISH COLONIES.

Average of the annual value of the whole manufactures and trade of the United Kingdom is estimated at—	Average of the manufactures & other articles exported, as per official returns, £60,000,000 official value, £40,000,000 real value, medium—	Leaves of manufactures for the home trade—	Average of the exports of cotton manufactures and twist—	Proportion of cotton manufactured goods—	Proportion of cotton twist only—
£250,000,000	£50,000,000	£200,000,000	£16,000,000	£10,000,000	£6,000,000

It is stated that the whole cotton and mixed cotton manufactures of the kingdom may be valued at 40,000,000*l.* annually. If so, the proportion of cotton manufactures and twist for exportation will be about one-third (being 16,000,000*l.*); and the proportion of our whole exported manufactures and other articles (being 50,000,000*l.*) will be about one-fifth of the whole value of our manufactures—viz., 250,000,000*l.*

A COMPARATIVE STATEMENT OF PERSONS EMPLOYED AND DEPENDENT UPON THE MANUFACTURES OF THE WHOLE KINGDOM, AND PERSONS EMPLOYED IN CULTIVATION AND DEPENDENT UPON THE LAND; AND ALSO A COMPARISON OF THE PROPORTION OF PERSONS EMPLOYED AND DEPENDENT ON MANUFACTURES FOR THE PURPOSES OF OUR HOME TRADE AND OUR FOREIGN TRADE.

Persons employed according to the last census, and dependent on the cultivation of land, with a supposed increase.	Persons employed in the whole manufactures of the Kingdom, with a supposed increase.	Proportion of persons employed in manufactures consequent upon foreign exportation.	Persons employed as merchants, traders, dealers, seamen, servants, &c.	Persons employed in mines, quarries, and all such works.	Handicrafts—as tailors, shoemakers, &c.	Professional persons and annuitants, &c.	Artificers & builders of all descriptions.	Disabled persons & paupers, &c.
8,000,000	3,000,000	1,000,000	3,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000

20,000,000 population—the whole includes the families supported by them.

It would from these data appear that the persons employed and dependent upon the land were double in number to those in the manufactures, admitting that one million of the traders, seamen, and merchants, were employed by the manufacturers; that they, the manufacturers, and their dependents, bear a proportion of one-fourth to the whole population; that the persons and their families employed for the foreign trade in manufactures of cotton and cotton twist bear a proportion to the whole employed in manufactures of about two-fifths.

COMPARATIVE PROPORTIONS OF THE PROFITS FROM THE PRODUCE OF ONE ACRE OF LAND TO THE LANDLORD, TENANT, LABOURER, TITHE OWNER, MILLER, AND BAKER.

One acre of arable land will produce four quarters of wheat in two years, four quarters of wheat will make rather more than 500 4lb. loaves, which are sold to the consumer, say at 9d. each, amounting to 18*l.* 15s. (but sold by the farmer at 12*l.*, as four quarters of wheat 60s.) We then inquire what proportion the landlord gets for his acre, say 1*l.* per annum. After paying land-tax for buildings and other contingencies, 15s. per acre is calculated to be the average of the arable land in the kingdom. The 18*l.* 15s. may be thus divided:—

Landlord, for one Acre, two Years Rent, at £1.	Tenant, for Living (himself and family) and Profit on his Capital.	Labourers and Horses, &c.	Tithes, Manures, Seed, &c.	Poor and other Rates, Taxes, &c.	Artisan, for Implements of Husbandry, Waggons, and contingencies.	Leaves for the Factor, Miller, and Baker.	Total.
£2 0 0	£2 5 0	£3 5 0	£3 10 0	£0 10 0	£0 10 0	£6 15 0	£18 15 0

It would result that the landlord gets 20s. net for the acre of land for one year, and for the two years 40s., consequently his proportion of the produce valued at 18*l.* 15s., is 1-18th part for one year, and 1-9th and a fraction for two years. We will suppose no rents paid, or land free, the consumer could then get his ninepenny 4lb. loaf cheaper by one penny, inasmuch as it is evident the 40s. bears the same proportion to 18*l.* 15s., as 1d. does to 9d., which share of 1d. out of the 4lb. loaf is all the landlord can possibly get for his two years of land.

N.B. In all these calculations round numbers have been used for the purpose of simplifying the subject.

May, 1841. LEWIS KENNEDY.

ON THE GERMINATION OF SEEDS, &c., &c.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—In your paper of the 5th of April, a correspondent notices that, having damped his mangel-wurzel seed to hasten its germination, he dried part of it with powder of quick-lime, to make it sow easier, and found, to his surprise, that the part of the seed which was limed came away some days earlier than the other which was damped only, and kept the lead, as to luxuriance of growth, all the year round. As this is not accidental, but a striking proof of a theory brought forward some years ago, it may perhaps interest your readers to have it stated.

Around all the germs of plants destined for the increase of the species—whether the buds or eyes, as they are called, of the tubers of the potato—the buds destined to produce branches on the stems of trees—or the more perfect and separated germ in the seed, the embryo of the future plant—around all these, embedded in the cotylidons, or end leaves of the most of seeds, or in the coverings which surround the seeds or buds, there is a deposit of nourishment laid up, to serve as the food of the young embryo when called into existence in the spring. The general name of albumen has been given to these deposits, which consist of starch or flour, sugar and gum or mucilage, and sometimes oil—all substances containing albumen ; and having been elaborated from it by the organs destined for that purpose in the plant. Before, however, these substances can serve as nourishment, and be received into the lactex, or vital sap or blood of the plant, they must be again brought back or reduced by a chemical process into the soluble state from which they were at first elaborated. The milky juice of the corn from which the farina or starch is elaborated, will be familiar to most of your readers ; and were it possible to preserve it in that state, it would furnish a ready food for the young plant ; but as this would not keep, it is elaborated into starch or flour, a substance which is difficult of decomposition, and in which state it is capable of being preserved, if kept from excess of damp or heat. This will explain to your readers the reason why unripe potatoes or grain germinate and come away in the ground more quickly than when very much ripened : the food is in a more soluble state, and more easily made available for the wants of the young embryo. As the strength of a healthy young plant will in great measure depend upon the quantity of soluble food with which it is furnished, it is thus of great consequence to have the seed placed in circumstances which will most assist the operations of nature in attaining this end. It has been long ago pointed out by M. Raspail and others, that the ultimate particles of starch consist of a substance similar to gum, which he calls dextrini, enclosed in a shell ; this substance is not difficult of solution itself, but it cannot take place till the shell is burst—which requires a very high heat and the assistance of other substances, as alkalies, and the principle called diastase, the agent in fermentation. We thus see that the food of animals and plants needs similar preparation—in so far, at least, as regards this substance. By the assistance of heat, soda, and yeast (which contains diastase), the flour is prepared into a loaf, which is more easily made available as food in the stomach, than would be the grain itself; so, by adding alkalies to assist in the action of the natural diastase, formed by the plant itself from the nitrogen of the seed, or by adding yeast where this is deficient, or other substances containing nitrogen to allow the formation of diastase, and by increasing heat in the evil, we assist and increase the efforts of nature, and a greater produce is the result. Some seeds are the better for being exposed even to a boiling heat, as the acacias of tropical countries, in which the starch is very much concentrated, and difficult to reduce. It has also been ascertained that electricity is connected with all transformations or changes of organic substances, either as cause or effect : when electricity is present, it accelerates or causes chemical decomposition ; and when chemical decomposition takes place, electricity is developed always (says Dr. Carpenter), though perhaps in most instances absorbed again by the new state of the compound. M. Maltuen, in experiments made some years ago with seeds, found that they germinated much sooner at the negative or alkaline pole of a galvanic battery, than at the positive or acid pole ; and, following up these discoveries by enclosing seeds in phials of alkalies and acids, he found they germinated quickly in the former, and with difficulty —sometimes not at all—in the latter. Connected with the same subject are the recent experiments of Dr. Horner, on the differently-coloured rays of the spectrum ; the violet or deoxidising end produces a chemical effect, similar to the negative or alkaline pole, and the red end produces the opposite or acid effect by the retention of the oxygen. Guided by these theoretical opinions, I was induced to try their effects on some very old spruce fir-seed in 1836, which had been three years out of the cone ; the year before, 1835, some of the same seed did not produce one-sixth part of a crop, and I had good reason to suppose it should be worse the next. The year before, when the seed was damped to accelerate germination, it had a musty fungous smell, and the seed leaves came up yellow, and, hanging by the ends in the ground, had not strength to free themselves from the soil. In 1836, however, after being damped, I added quick-lime in the state of powder, which, besides furnishing an alkali, has a great affinity for carbonic acid, which is necessary to be extracted from the starch before it can be made soluble, and which produces heat by concentration of the oxygen and carbon when being extracted. After the seed was thoroughly damped, I sprinkled it with the powder of lime, and kept it damp, from the use of a watering-pan, for ten or twelve days ; at the end of which time it had swelled off plump, and had all the sweet smell of the sugar formed in healthy seed when malted in this way : and when deposited in the ground, it was not long in pushing through its seed leaves as healthy, upright, and dark green in the colour as the first year it was sown, and, like the mangel-wurzel plants of your correspondent, the seedling spruce was strong and healthy. I drew up an account of this experiment for the *Gardener's Magazine*, which was inserted in the spring of 1838, and to which I would refer those wishing for further particulars. Enough, I hope, has been stated to point out the theoretical principles on which the benefits of lime proceed. The reasons why I preferred lime were its cheapness, and the affinity of quick-lime for carbonic acid ; as to its alkaline properties, soda is much more powerful, but lime seemed to be that which had produced most effect in the experiments of M. Poyen and others on the same subject. The seed must be carefully kept damp till sown, as the dry powder is apt to corrode ; and seeds do not suit well to have their dormant powers brought into action without being sustained, which, if far forward and severely checked, may destroy life altogether. Since we experimented as above on the spruce fir-seed, we have not had any other seed so long kept to make trial of ; we have, however, tried it on Magnolias and other weak-growing seeds difficult to start, and found them to germinate sooner, and make stronger plants than usual. Some others who have tried it have also found it of benefit. It is to seeds containing their albumen, principally in the form of starch, that it will be of most benefit ; and to those which have been hurt by long keeping dry, or being exposed to great heat ; those which have been spoiled by dampness, have their food decomposed and spoiled. It is difficult also to say how far the drying can be endured without being prejudicial, and when the organized tissue, the seat of life, may have its powers of resuming vital activity so far trenched on as to be considered dead. After this has taken place, any stimulus that can be applied can only hasten consumption, as the vital force which should preside over and direct the chemical has fled. Professor Otto, of Berlin (as stated by Dr. Ludley, in the Theory of Horticulture), has said he found great benefit in applying substances yielding oxygen : perhaps it may have been to seeds containing oil, which, being a substance nearly destitute of oxygen, will therefore require an extra quantity of that substance, more than is found in the atmosphere, to reduce the food to a soluble state. We have never found any benefit to result from our application of oxalic acid, the substance recommended as yielding oxygen (how is not stated), but it was to seeds containing starch, as old Magnolia and Acacia seeds, we applied it. To old seeds of lint, rape, turnip, and other seeds containing oil, the Professor's recipe may therefore be best. We never found damping or liming productive of much benefit to peats, fir, and other oily seeds; but to all containing starch or flour, which is by far the greatest number, the lime, we are convinced, will be of great benefit, and is perhaps the main reason why wheat, prepared by steeping in lime and other substances—and potatoes, dusted with lime after cutting—have been benefitted.

In the paper for the 3rd of May, there are enquiries about the curdling of milk, and the best way to prevent and cure; also about remedying the bad flavour which turnip feeding produces in the milk, butter, and flesh. The albumen of the milk is coagulated by acids, heat and electricity, or any substance that will act chemically on the milk and produce acidity, as heat and electricity do. The dishes should be carefully cleansed from all substances in which a tendency to decomposition or chemical change may have commenced—in fact, from all extraneous substances—and the place kept dry and as cool as possible. If acidity commences, it should be checked by sprinkling a little powdered chalk or carbonate of lime, which is not so saturated with acid but it will take up what little has been formed, and when it subsides may be drained off. To remedy the flavour of turnips, they should be boiled and salt given, and a few hours before the time of milking, some other food, as beans, bran, &c., should be given, with more salt; for fat cattle the turnips should be discontinued some days before killing—the volatile principle that gives flavour is thus got rid of.

In that of the 17th of May, there is a communication about the gooseberry caterpillar, in which it is said nothing but an infusion of fox-glove will kill. We have been very much troubled with it here, and have found the powder of white hellebore, which is more easily got, to be quite sufficient. The caterpillars are on the under-side of the leaf; and one man holds up the branches while another dusts the powder on them from below; if perfectly dry, it spreads in a cloud of dust, and misses none, if well directed; and none it touches will live, if the hellebore be fresh and good. When it gets damp, or too long kept, it loses its pungency and efficiency, and we have seen frequent disappointments from this cause; if only partially damped, it may be recovered by toasting before the fire in a flat dish. Some prefer to infuse it, but we have always found most benefit from the dry powder, if carefully dusted on the caterpillar from below; it may be seen to collapse when the powder touches it, and in a few hours there will be nothing but skin.

On the 24th of May, there are some queries about the using of sulphate of lime (gypsum).—The method advised by Professor Johnston to drive off the superfluous water, so as to make it break smaller, should be the last. As the intention is to expose as much surface to the atmosphere as possible, whatever will make it break it into smaller particles should be an advantage; and to prevent its being agglutinised again into lumps by the rain, it should be spread out thin as soon as possible after being broken. Dr. Liebig's opinion is, that it acts principally by combining with the carbonate of ammonia in the air, to form sulphate of ammonia, and thus form a fixed salt in place of one that is volatile. If this is correct, the more surface that is presented to the air, the more benefit will be the result. Others say it forms a constituent to the plant; and it may also be asked, if the carbonate of ammonia is so near the surface of the ground as to unite with the sulphate of lime spread on it, will it not be washed into the ground by the rains, and thus furnish both carbonic acid and ammonia to the plant? Whatever may be the result of theories, the sulphate of lime is not a volatile substance, and should be spread as thin as possible on the ground; the more extent of surface the more action should take place.

A good deal has been said in your and other papers on the ravages of worms at the roots of corn. We are of opinion the subject has not been properly investigated. In the *Ayr Advertiser*, it was stated about two years ago by an intelligent agriculturist, that more of the damage done was owing to the state of the ground, than worms; and we are of opinion there is much truth in this statement. It is necessary the ground should be porous, that water may not stagnate, and that the confined air and heat may be retained in the pores; but if the fissures are longer, the air will not be confined, and the water and gases retained by the capillary attraction and absorption of the small particles will vanish into the atmosphere, and the roots finding no nourishment will perish. This state of the ground may be brought about by want of pulverization; clayey stiff land, perhaps worked in wet weather, will leave hollow places in the soil below the surface, and though the roots thrive for a time till they have penetrated to this, while showery weather continues they may cause failures more or less according to their extent. Wet lands ploughed early may be heaved by frost; and some grey heathy soils are naturally too spongy. All these causes may have an effect, and the benefits of rolling may arise, more from the consolidating of the ground, than the crushing of the insects; which, as they are imbedded in the soil, may not take place to the extent anticipated. The wireworm so much talked of, a long yellow many-footed worm, with a brown head; and the millepedes, long lead-coloured worms, generally called wireworms, we have never seen destroy anything but solid roots; fibres, as of corn, we should think they do not meddle with. The grub or cut-worm, a long short thick worm of a dirty green and brown colour, the larvæ of the tipula or crane fly, (jenny nettles, or daddy-long-legs, are some of its provincial names), does us most harm in the nursery way; but it eats the plants at the surface of the ground, and we have not observed its ravages on the roots. We have had the roots cut of seedling beech by a bright yellow annulose insect, the larvæ, we think, of some beetle; and such as these and the grub also may produce ravages at times; and may in turf, when they cannot get to the surface, cut the fibres and not the stem; but the thing we imagine wants confirmation—and more harm is laid to the score of these insects, than perhaps they deserve.

LANDLORD AND TENANT.

Sir,—I beg leave to trespass on your attention for a short time, in order to remove a misconstruction which your correspondent X. Y. Z. has put upon my remarks on the subject of whether the landlord or tenant is to be the actual manager of the farm; namely, that I am an advocate for parcelling out the soil of England amongst a comparatively small number of "great independent corn manufacturers," to the destruction of all the smaller occupiers; a conclusion which I think the general tenor of my observations will by no means warrant.

The end which X. Y. Z has in view, is precisely the same as actuates myself; we only differ as to the means most likely to effect that object. The progression of agricultural improvement, and in these days of "apostolical succession," whether my creed be orthodox or heterodox, I think I cannot do better than "rehearse the articles of my belief" as follows:—

1st. That it is not at all necessary to good farming, that the farms should be such as to employ a capital of 10,000*l.*, and that such a state of things would be most injurious to the community, as for every farm of that size, one family only is maintained, where five might live comfortably under a different arrangement, and the land would be equally well managed—to say nothing of the evil of displacing that link between the rich and poor which the smaller farmers present; a class which no wise landlord would ever wish to molest.

2nd. That, generally speaking, if a tenantry are well treated; if the rent is reasonable, and they have either a legal or moral certainty of permanent possession of their farms; if the restrictions are confined to a few general rules which no man of common sense would wish to infringe, if he were at perfect liberty so to do; and that no undue advantage will be taken of their skill and industry; and if the stock of game on the estate be kept within moderate bounds, and not preserved to such an extent as to dishearten the cultivator in his exertions, I maintain that the spirit of improvement on that estate will be as active as under any system of coercion whatever, and that influence will actuate the smaller occupiers to quite as great an extent as the larger ones; and, providing their farms are large enough to allow of a regular rotation of cropping, and a flock of sheep to pasture their few acres of seeds, that they will be as well able to maintain their ground as the rest.

3rd. That the system of dictation, as advocated by your correspondent, would only be submitted to by those of such an inactive turn of mind as would go far to prove their unfitness for the situation altogether; and those who were so anxious to commence farming as to coerce their better judgment into an acceptance of the terms, and that those who would have spirit enough to prompt them to superior management, would be the very persons who would be shut out. I am speaking of applicants; as for those in previous possession, it requires a great deal of annoyance and oppression before they can be driven from the homes of their fathers.

4th. That in order to the successful carrying out of X. Y. Z.'s plan, it would be requisite that the teachers should be previously well taught themselves; not merely to be able to deliver speeches at an agricultural society's anniversary, whereof the burden is an exchange of compliments, but that they should possess a sound knowledge of the practical part of agriculture. That of the whole body of landlords, a part have no taste for agricultural pursuits; another part prefer the breeding of prize animals to the dry details connected with soil-turning up; and that the remainder—those whose dictation would be beneficial to all parties—form but a small fractional part of the whole. That where agents were appointed by the owners to enforce this new reform bill, they would consist of those who had been extensive farmers themselves, and had shown their capability for the work by a previous insolvency—of distant poor relations, who might dislike, or be unfit for, the army, navy, or church; and that partiality, and the interest of friends, would have the principal share in the matter; that their pertinacity in carrying out their plans would be in an inverse ratio to their real abilities and fitness for the office. That the Blackers and Bakers would not form a more important integral part of the whole than they do at present, and that however distant the period may be when the occupiers of the soil will have arrived at perfection in their art, the period when the owners will be so far before them in "useful knowledge," as to take the management of their farms out of their hands with advantage to all concerned, is, at the least, not the less remote.

5th. That where the tenantry are fairly treated by the owner, and a helping hand is held out by him as respects draining, farm buildings, &c., &c., such tenantry will be found in an active state of improvement, and where cases similar to the imaginary one put by X. Y. Z., really do occur to any extent—of farms managed according to traditional instructions from their forefathers, that the cause may generally be traced to the refusal of the owner to second the tenant in his efforts to accomplish something better. To the uncertainty of the tenure, or to the active exercise of some of those restrictive clauses to his detriment, which are so powerful for evil, and so powerless for good, and in the resolute enforcement of which, it would not be difficult to decide at whose door ignorance and prejudice lie—two qualities which are generally supposed to be possessed by the cultivators of the soil *exclusively*.

6th. That were the system of compulsion to obtain, it would not be a great advance to extend it to stock, in which case, the tenant would be obliged to sell his young cattle at two, three, or four years' old, or feed them up; to pasture his seeds with southdowns, Leicester's, or cheviots; to sell the increase of that flock, as lambs, hogs, or wethers of one or two shear; to not keep a breeding flock at all, but to buy lambs or hogs, just as it coincided with the views of his dictator; in fact, he would become a mere machine, and to carry out the plan to perfection, he would only be a free agent in one particular, to wit—to put his hand into his pocket *to pay*, so long as anything remained within it *to pay with*.

7th. That it is not essential to the production and maintenance of feelings of kindness and goodwill between landlord and tenant, that the latter should be well trammelled; but on the contrary, that such a state of things would be detrimental to their growth in just such proportion as the obnoxious restrictions were enforced. The owner would have opportunities enough of communicating with those under him, independently of such means; let him advise and recommend what he deems to be improvements. He will soon know the cast of character of his principal tenants, and it is a poor eatate indeed, if there dwells not on it one or more intelligent men who will put their landlord's advice to the test of experience, and if successful, adopt it; and the rest will not be so blind to their own interest, as to reject it afterwards when offered to them. But the few instances in which compulsion would do good, would be so enormously counterbalanced by the evils which would follow in its train, that I should look upon its universal adoption as a great national calamity. What the tenantry of England want, is a fair rent, security of possession, legal or moral, and for no impediments to be thrown in their onward course of improvement, either by enemies or officious friends, and the result will be satisfactory to the consumers of their produce, to the owners of the soil they cultivate, and to themselves; in a word, let the landlord do *his* duty, (not *more* than it,) and the tenants will do *theirs*.

I shall not trouble you again on this subject, but remain, Sir, yours', truly, B. H.

Barton-upon-Stather, Lincolnshire, June 12.

AGRICULTURAL STATISTICS OF THE UNITED STATES.

COMPILED FROM THE RETURNS OF THE MARSHALS FOR TAKING THE SIXTH CENSUS.

STATES AND TERRITORIES.	Bushels of Wheat.	Bushels of Rye.	Bushels of Indian Corn.	Bushels of Oats.	Bushels of Buck Wheat.	Bushels of Barley.	Bushels of Potatoes.	Horses and Mules.	Neat Cattle	Sheep.	Swine.	Value of Poultry.
Maine*	848,166	137,941	950,528	1,076,409	51,543	355,161	10,392,380	59,208	327,255	649,264	117,386	$123,171
New Hampshire*	442,954	395,530	1,252,572	1,198,989	115,463	121,400	6,234,901	39,850	261,088	606,891	120,167	97,862
Vermont*	652,293	447,318	1,047,601	2,342,497	158,509	55,685	8,206,784	60,274	350,106	1,393,420	297,952	176,437
Massachusetts*	158,923½	541,956	1,809,395	1,899,530	87,010	166,419	5,385,652	62,484	271,760	378,226	143,021	540,295
Rhode Island	3,088	34,521	425,893	169,925	2,979	63,790	904,773	8,074	136,700	90,146	29,669	61,492
Connecticut..........	86,980	736,865	1,468,538	1,456,523	299,470	33,789	3,414,227	34,751	233,969	406,985	132,222	176,659
New York	11,853,507	2,984,913	10,195,142	20,728,738	2,244,338	2,498,170	30,000,508	476,115	2,642,438	5,381,225	2,116,953	2,373,029 3–8
New Jersey	774,023	1,636,576	4,311,381	3,096,516	866,970	12,601	2,074,118	69,769	219,548	218,555	259,051	412,487
Pennsylvania	13,029,756	6,293,447	13,696,619	18,053,477	1,971,928	178,100	8,626,923	338,565	1,146,418	3,396,431	1,450,531	1,033,172
Delaware.............	215,165	33,560	2,029,361	937,405	11,299	5,260	200,712	14,421	54,883	39,247	74,228	47,465
Maryland*...........	3,511,433	824,333	8,470,165	3,579,950	74,848	3,594	1,058,919	93,954	240,432	262,909	421,520	219,159
Virginia	10,066,809	1,397,170	34,646,696	13,297,551	241,643	14,620	2,873,470	243,173	1,008,318	1,280,736	1,916,230	752,467
North Carolina†	..	..	..	..	..	..	..	..	..	..	..	..
South Carolina	705,925	44,530	14,721,785	1,446,158	72	3,967	2,697,713	130,826	573,840	232,664	888,513	590,594
Georgia	1,732,956	69,851	17,329,797	1,290,048	269	13,345	1,184,386	134,748	755,060	254,947	1,288,314	473,158
Ohio (*a*)	16,214,260	801,943	33,954,162	13,993,624	681,335	207,590	5,600,566	407,404	1,136,204	1,964,957	2,084,268	730,720
Kentucky‡	..	..	..	..	..	..	..	..	..	..	..	..
Tennessee	4,547,273	297,033	42,467,349	6,770,116	6,187	4,758	2,373,034	327,526	777,390	748,459	2,795,630	581,531
Louisiana	105	1,812	5,900,473	110,013	..	..	845,935	99,067	348,708	100,056	344,685	273,314
Alabama	746,106	36,632	18,680,663	1,427,992	52	6,682	1,560,700	128,515	607,580	144,372	701,160	829,220
Mississippi	196,576	15,642	13,161,231	5,98,604	61	1,544	1,538,623	109,227	623,157	128,376	995,739	369,481
Missouri	916,077	63,185	15,591,432	1,937,573	16,347	9,771	684,491	157,578	367,623	288,235	1,072,813	230,283
Indiana	4,154,256	127,586	28,008,051	5,875,449	49,681	25,778	1,548,190	243,767	614,489	673,952	1,580,051	393,228
Illinois	2,740,380	95,965	22,116,627	4,558,507	63,950	64,455	1,956,887	195,186	604,693	377,963	1,394,286	330,968
Michigan§	..	..	..	..	..	..	..	..	..	..	..	..
Arkansas............	112,200	5,925	3,931,149	167,452	88	85	290,887	39,085	135,527	41,877	393,004	93,549
Florida Territory§	..	..	..	..	..	..	..	..	..	..	..	..
Wisconsin Territory†..	..	..	..	..	..	..	..	..	..	..	..	..
Iowa Territory	154,737	3,787	1,326,241	216,385	6,217	729	234,063	10,801	37,449	15,354	104,891	17,101
District of Columbia ..	12,147	5,081	39,385	15,751	272	294	12,035	2,145	3,274	572	4,673	1,557
(*a*) Shelby county, since received	78,691	5,498	253,422	130,010	1,795	562	29,218	3,637	10,509	10,143	18,941	4,211

* The returns of the States marked thus,* have been corrected. The statistics from the remainder of the States and Territories are yet not examined. † The aggregate not yet made. ‡ Statistics not yet received. § Aggregate not made. No return from Middle Florida. ‖ Some of the Marshals have returned pounds of Ginned Cotton, others in the seed.

STATES AND TERRITORIES.	Pounds of Wool.	Tons of Hay.	Tons of Hemp and Flax.	Pounds of gathered Tobacco.	Pounds of Cotton gathered.‖	Pounds of Silk Cocoons.	Pounds of Sugar made.	Value of products of the Dairy.	Value of products of the Orchard	Gallons of Wine made.	Value of Lumber produced.	Brls. Pitch, Turpentine, Tar, Rosin.
								Dollars.	Dollars.		Dollars.	
Maine	1,465,551	691,058	38	..	..	..	238,230	1,493,718	..148,249	2,236	1,808,683	..
New Hampshire	1,260,988	496,647	53,040	115	..	406	1,097,398	1,585,955	220,056	94	401,358	..
Vermont	3,257,795	734,047	24 1–4	585	..	4,233	4,220,541	4,892,097	1,109,387	100	366,146	..
Massachusetts	1,055,591	569,425	23,132	64,955	..	1,741	579,227	2,273,219	389,177	1,905	476,845	..
Rhode Island	173,630	63,417	lb. 383	307	..	358	50	218,922	32,098	745	44,455	..
Connecticut	893,675	426,160	lb.147,841	471,657	..	17,388	51,764	1,365,653	302,953	5,243	147,831	..
New York	4,012,144	3,160,916	763	6,567	..	2,103 1-4	10,093,991	10,497,032	1,732,357	14,700	3,788,173	2,924
New Jersey	396,573	326,496	33,710	1,922	..	1,966	56	1,315,676	562,863	9,416	297,856	2,200
Pennsylvania	3,076,783	1,199,963	170,760 1-4	350,861	..	278,939	1,555,977	2,271,420	554,657	19,182	566,607	1,807
Delaware	64,404	21,880	602 1-2	272	347	1,442	..	232,446	25,914	529	5,562	..
Maryland	500,499	110,836	34	18,916,012	5,673	2,290	36,266	466,558	114,339	7,622	230,985	..
Virginia	2,672,044	288,740	92,123	14,157,841	10,767,451	3,138	1,530,541	1,454,861	668,921	37,233	516,412	5,262
North Carolina	..	..	..	..	..	..	..	..	..	..	..	..
South Carolina	289,202	20,008	35	51,518	148,907,880	2,210	30,000	577,849	52,276	643	504,884	735
Georgia	363,340	9,264	1,787	164,551	134,322,755	3,208	231,140	552,805	135,446	6,319	106,066	153
Ohio	3,650,970	1,024,803	252,520	6,023,309	..	4,316	6,909,257	1,701,602	461,191	161,844	300,242	430
Kentucky	..	..	..	..	..	..	..	..	..	..	..	..
Tennessee	1,029,526	30,512	45,053	26,542,448	128,250,308	1,163	251,745	930,603	366,767	653	200,266	3,119
Louisiana	49,524	36,308	..	120,174	87,640,185	317	249,937,720	150,818	11,869	2,884	112,405	12,233
Alabama	173,400	13,933	5	214,307	240,379,669	1,351	10,135	197,442	33,161	11,253	233,828	197
Mississippi	185,839	171	16	83,451	289,838,818	85	70	389,177	41,119	12	152,094	2,248
Missouri	462,644	44,870	20,071	8,450,727	360,338	70	252,560	69,230	76,305	22	68,150	356
Indiana	1,202,209	191,158	97,657	1,821,406	180	370	3,720,186	751,441	90,324	3,495	213,471	..
Illinois	600,366	156,442	50,326	415,706	199,989	1,171	394,446	433,873	118,638	471	198,070	..
Michigan	..	..	..	..	..	..	..	..	..	..	..	..
Arkansas	63,034	579	1,039	143,889	23,887,192	90	2,535	34,577	7,454	..	161,685	25
Florida Territory	..	..	..	..	..	..	..	..	..	..	..	..
Wisconsin Territory	..	..	..	.,	..	..	..	..	..	..	..	..
Iowa Territory	23,028	17,953	313	12,676	..	..	41,450	23,609	50	..	50,305	..
District of Columbia	707	1,231	..	55,550	..	576	..	75,566	3,507	25	..	..
Shelby county, since received	15,874	4,508	..	..	..	1	79,831	3,532	..	..	3,277	..

ON LEASES.

[We give insertion to this communication from an old correspondent, although in many points we differ from him.—Ed. F. Mag.]

Some time ago I sent to this magazine a few observations on the subject of leases, which were noticed by Mr. Wyatt, of Upmarden, and I see the subject has been continued by several correspondents. The arguments *pro* and *con* may be narrowed within a very small compass—that no owner or purchaser of land will expend one penny of money, plant a tree, make a road, or build a house, until the rights of his proprietorship be found valid and are duly secured to him; and consequently he cannot expect or desire a farmer to do what he will not do himself under exactly similar circumstances. This desire, so common and frequent, is not the least of the many anomalies of human nature, and transfuses itself into almost every affair of human life. To deny to others the same privileges and security which we claim and obtain for ourselves, has formed a very prominent characteristic of mankind in every stage of existence; and though it be in many cases very much modified and compelled to give way to circumstances, it yet exerts a powerful influence on the different relations of society. The love of power seems to be very deeply implanted in the human breast, and the inherent slavish inclination of the bulk of mankind to be under the direction of masters, continues to uphold the tyranny which one part of our species has ever been so fond of exercising over the other. And it is not a little extraordinary in our enlightened age, to hear arguments raised against a mode of action which one party reckon essential to their own safety, but doubtful of the utility when applied to others in similar circumstances.

The holding of land by lease for a definite period was introduced into Scotland nearly a century ago, by a landowner possessed of a greater share of common sense than his neighbours, and who had advanced very far in advance of his generation. That mode of holding possession, and the consequent distribution of capital, has made Scotch farming what it is; and wherever introduced, it has not failed to produce similar results. A madman alone would think of expending his capital on the property of another, without due security that he or his heirs will derive the benefit. The present possessor of an estate may be all that can be wished, and his successor also—but a whole family may soon become extinct, the estate sold, and the farmer placed at the mercy of strangers who know nothing of his compact, and like every other possessor, are desirous of getting the greatest possible value from the purchase-money. Much has been said by the opponents of leases about the mutual feelings and regard, and interchange of good offices, that are promoted by yearly and dependant holdings; but a lease does not extinguish such offices; and in every properly constituted social system, all dependance of one class or individual upon another should be destroyed, except in the sole point of exchanging "value for value," or, as the Latins expressed it, the "*quid pro quo.*" The power of restraining and commanding the political and religious opinions of others, by means of dependant tenures, is so absurd as scarcely to merit any notice—it is slavery continued in the vilest form; for just as mind is more valuable than matter, so much the more degrading is the slavery of the mind than that of the body. Time and the force of circumstances, which make more converts than any reason or arguments that can be employed, have "compelled" the landowner to let in leasehold his property for building upon, for the accommodation and benefit of the people, upon receiving the fair value of his property, the right of possession being always reserved for him; but all control is lost, and value is fairly exchanged for value. The capital that is expended on such tenures can be rendered available to the owner at any time by the sale of it; and of his time and labour he can restore to his pocket the fruits of his industry, and embark in another speculation. Into these contracts and transfers, religion and politics do not enter. The landowner draws the stipulated sum for the liberty of use, and the occupier may be a republican or an infidel, and is never questioned on the subject.- But if a farmer expend money in improving land, he is bound to the spot, and must wait for years until the slow nature of his occupation return the outlay, for which purpose the longest lease now granted is barely sufficient. In Scotland, a mysterious cycle of 19 years has been very generally adopted; and the feudal-ridden lawyers who have the charge of most of the landed property in that country, and the love of vassalage domination, have continued to uphold the *delectus personæ* to the landowner, to the evident prejudice of both parties. The vigorous and enlightened mind of Von Thaër broke through the feudal mists of his country; and he expresses his opinion, that the nearer the tenure of the farmer is assimilated to that of the landowner, the more will the interest of both parties be promoted; and the more distant it is, the more will mutual interest diverge. Under the longest lease the farmer is disadvantageously placed, and many trammels and incumbrances remain to be removed ere the full development of the inherent resources be obtained, which have as yet been retarded by a mistaken policy. The tenure of land is the foundation of the whole policy of the art of agriculture. A house cannot be erected without a foundation, nor the walls decorated unless they be first built. In excluding such subjects for discussion, our societies are too rigorous—it is the first thing to be attended to, as it is the foundation of every improvement. I have elsewhere proposed that during a long lease, the half of the rent be left variable by the prices of the aggregate articles of produce, in order to benefit both parties in case of a rise or fall; but with a settled currency and continued peace, great fluctuations in price may not be expected, as mankind may now be wiser than quarrel about trifles, and butcher each other in war, to please the ambition and avarice of kings and their minions. The unproductive state of college and church lands from being leased by the year, or at utmost by the life of the incumbent, is well known; and here a monstrous absurdity is inflicted on the human understanding, by supposing that the present generation must be deprived of the fullest use of their legitimate inheritance, by the will of some feudal dotard of the tenth or twelfth century, who, after spending his life in marauding and plundering, and often in slaying his fellow creatures, bequeathed the land thus acquired to such purposes as were pointed out by his ghostly adviser. Cultivation is thus restricted, and the exclusive purposes have chiefly operated as powerful engines for upholding peculiar doctrines of monopoly and servility. The salaries of the servants of the people should be derived and paid from the general revenue, and not be allowed to fetter skill and industry. It is full time that agricultural undertakings be viewed as sensible material objects, on which skill and capital are to be employed for a general purpose, and be divested of every fetter and incumbrance that power and policy have imposed.

Rents are highest where leases of the longest duration prevail, and there also the most improved and forward state of cultivation will be found to exist. Free trade in corn, and in all the eatables and wearables of life, will apply a much more powerful stimulus to the exertions of skill and industry than societies and clubs; foreign rivalry will break down the barriers of prejudice and custom, and, "*horribile nefas*," it will disturb the quiescent state of the "old turf and the weeds." Nations export only the surplus of any produce, after serving their own purpose; and experience shows the very small quantity that is sent of several articles, on which the duty is almost nominal or none. In every case where no demonstration "*à priori*" can exist, experience is our guide; and it shows that all the prophesyings on the effects of previous changes from restriction have been wholly falsified by the event; and yet babbling phrasemongers never cease to phrophesy, even though the days of inspiration are confessed to be long gone by. No diminution of the value of land would ensue from free trade, as a more liberal policy, and the introduction of the known means of production, and the additional demand from extended commerce, will amply compensate; but in order to effect this purpose it will require other persons in charge of landed property than lawyers and commercialists, or the pedants of the camp or of the quarter-deck—the most enlightened practical men will be required to devise and execute an improved mode of management. No British farmer who knows his business is afraid of foreign competition: our northern cultivators almost to a man, and many of the most extensive land-owners, have long desired free trade. With our capital and skill no Polish lord, with his host of slaves, need terrify us; for wherever mind has got most command over matter, there will superiority exist, and that country will be the richest. No artificial props are required—only let all impediments be removed, and both will fall together; and thus allow the development of the natural inherent properties of the soil, by conceding the fullest interchange of all manufactures, of which agriculture is an essential part. It is curious that the idea of capital and industry requiring restraint and prohibitions to direct its course profitably, has infested all European policy down to this very day: even the vigorous and original mind of Bacon was entangled in these mazes and absurdities, and our wisest statesmen have caused "empty" ships to sail the ocean, in order to employ profitably an element perfectly capable of directing itself, and also of directing the directors. Upwards of five half-centuries ago, in the reign of Elizabeth, the hotbed of patents and monopolies, the immortal Raleigh, in deprecating the "compulsory" cultivation of certain articles, recommended the free and unfettered scope of capital and industry; and for thus going such a huge stride a-head of his age, and for his general liberality of sentiment, he paid the usual penalty of the time, in the loss of his head—a disgrace never to be wiped away. The very circumstance of any article requiring protection to ensure cultivation, shows it to be unfit for that locality, and soil and climate will soon point out the most suitable. The numerous pamphlets, speeches, and essays that were published on the subjects of agricultural distress and the methods of relief, were wholly useless, not being based on the simple principle of a reduction of rent and modification of taxation to existing circumstances; and equally useless and absurd are the opinions and rhodomontades on the corn laws: for whatever opposition may continue to be offered, the simple principle must prevail at last, the deviation from which has ever caused so much confusion, misery, and want. The contention and discussion are not worth entering upon; and there is no record in history of any country ever having reached, or rather of having been allowed to reach, the full extent of population and of cultivation. I have read that free trade is the true theory, but does not do in practice—but it has never been tried; and if a theory be true, it must do in practice; and if not, it is not a true theory. It may at least be equally true with that of farmers who pay four shillings for threshing one quarter of wheat, when means have been long known of doing it for sixpence; and who offer premiums for steam ploughs for the purpose of reducing manual labour, and reject thrashing by steam because it "does" reduce manual labour, and never see the incongruity. Of a piece with this logical specimen are the speeches and essays we read, being just as much worthy of notice as the airy warfare of kites and cormorants, and their theories as idle and chimerical as the reveries of fathers and monks.

17th June, 1841. RADIX.

THE CORN LAWS.

Although fully satisfied of the frauds practised under the present system of averages, and that the scale of duties is too prohibitory, I still maintain the justness of the principle of the sliding scale; and am fully convinced that a fixed duty of 8s. would be ruinous to the agricultural interest of England.

The admission into this country of foreign wheat at that low duty would unquestionably lower the price greatly; but as soon as the first excitement produced by so great a change was over on the continent, the reduction would be such as to prevent the home culture from being continued in nearly one-fourth of the present soils, and greatly depreciate the value of those lands which could be maintained in tillage, with the consequent evils of embarrassment to the landlord and their incumbrances—diminution, and to some extent destruction of farming as a profitable occupation, with distress to the agricultural labourer.

It is further a matter of extreme uncertainty to know or predict the average price of wheat for the next 20 years, on the supposition of a foreign source of supply being thus resorted to; for instance, the average price of wheat in Prussia, comprising Dantzic, Konigsberg, Gumbinnen, and Marianwerder, from 1816 to 1837, was 26s. 3¼d.; and including Posen, Brandenberg, Pomerania, Silesia, Saxony, Westphalia, and the Rhenish provinces, 28s. 3¾d. But in 1825 Mr. Huskisson stated that the average price of wheat at Dantzic for 20 years, was 45s. per qr.—the first, a time of peace; the last, of peace and war.

It is only reasonable to suppose, that natural causes and political events should produce as great a fluctuation in prices abroad as they have done here. In 1792 England *exported* nearly 300,000 qrs. above her imports; the average price that year being 40s. And in 1800, a bounty was granted on the *importation* of foreign corn (41 Geo. 3rd, chap. 10). In that and following year, no less than 2,620,000 qrs. of wheat and wheat flour were *imported*,—price 110s.; and in 1822, the price of wheat was 43s. The last period was one of peace, and of plentiful produce; but 1800, one of war, with a failure of home crops. The legislature of this and every other country, from prudential motives, immediately prices become high, *restrict*, or altogether prohibit the exportation.

See 23 Henry 6th ; 6 Geo. 3rd, c. 5 ; 7 Geo. 3rd ; 8 Geo. 3rd, c. 1 ; 13 Geo. 3rd, c. 1 ; 30 Geo. 3rd ; 41 Geo. 3rd, c. 2. Suppose a law to pass, the operation of which would be to prevent the growth of corn in this country; would not that produce the same effect as a sterility by nature, or a constant failure of crops at home?

Suppose, in reference to our immediate case then, a scarcity abroad, or an interruption of commercial relations; what would our condition be? By the ancient laws of this country, duties were levied on exportation (11 and 12 Wm. III.) What is there to prevent the political and fiscal object of other countries, dictating the like measures towards us? Certainly not their love of our national pre-eminence.

The *fear* of dependance on Foreign countries for corn is no vain *fear*. All must admit the political jealousy of different countries towards each other; and the bitter lengths they will go to hurt or even destroy their rivals, let it be either commercial or territorial. Again it is asserted, and with truth, that the rivalry in manufacture between countries is intense, and increasing by the aid of machinery to such extent, that the supply outruns the means of consumption; and in this lies the immediate evil attempted to be remedied. It is this spirit of competition which prompts one country to avail itself of every advantage which its commercial or agricultural position may give it.

If two countries are exchanging corn for cloth or cotton, that which is the corn country will in the end have the strong hand. This is evident; for the commodities are of *unequal* necessity, and free trade in commodities of *unequal* necessity is a *delusion*. For the corn country can more readily dispense with the supply of cotton: they can, as they have done, manufacture for themselves; but the cotton country has not that ready remedy.

What a tremendous engine of power is a command of the first commodity of life—the power of starving their rivals! Again, it is said that the corn country could not exert that power without injury to itself; true—but the injury to itself is no way commensurate to that which it inflicts.

That a people can do without the ordinary supply of clothing, or other manufactured goods, is evident from the contest between this country and its American colonies. At the beginning of that unfortunate dispute, not a yard of cloth was made in America. The people took a pride in imitating the fashion and using the dress of England; but they proved that a people will sacrifice pride and personal comfort to gratify their resentment. This did the American revolutionists. A commercial non-intercourse act passed here, with a view to coerce them; but it had not that but an opposite effect. They *wore* and *turned* again their cloths, scouting the English articles of dress until they could manufacture for themselves.

The present movement in Ireland for home manufacture should impart the same lesson. They have a free and excellent market in this country for their agricultural produce. And they receive without tax or burden the cheap and equivalent manufacture of England. But they are not content; they think they can keep their food at home, and manufacture for themselves.

Now, seeing this illiberal feeling prevail between two parts of the same kingdom, from the merest local jealousy—what therefore would the same feeling dictate between *rival* and *hostile* nations? And what would be one of the first laws passed in Ireland, if that country had a parliament of its own?

Where is the dawn of harmony in the world, that we should be tempted to open this main floodgate? In America, with her boundary question? In Ireland, with its repeal, and other agitation? In France, with her views on Egypt, and occupation of northern Africa? or is it in the commercial struggle with the German League?

From political ambition, commercial rivalry, and other motives which actuate men in a mass, as well as individually, foreign countries will still be hostile to this. It becomes their interest to produce distress and confusion here; and it would be contrary to all past experience and human nature, if they did not exert every means in their power to effect it. In fact, the supply of food is a concern of itself; nothing can be more fallacious than to apply the common analogies of trade to it. Who, for instance, would not prohibit it, or restrict exportation in a season of scarcity? But this is contrary to free trade. That scarcity from bad seasons would be avoided by the foreign corn trade, is a fallacy. Supposing that trade should flourish on the *ruin* of *home cultivation*, we should exchange the bad season at home for the bad season abroad.

In proof that a free trade would not prevent scarcity from bad harvests, look to the lengthened period England grew more corn than she required, and was an exporting country up to 1792. So late as 1773, such was the excess of production, that the 1st of William and Mary, a bounty of 5s. was allowed on exportation when wheat was at or under 44s., and was continued by the act 31st Geo. III., c. 30.

When bad harvests occurred here, it generally happened the same occurred to some extent on the Continent: thus, with the fiscal regulations of those countries, England was left mainly to her own resources.

The consequent distress in England exceeded all modern cases. For instance—the price of wheat varied in the years 1202 to 1260 from 6s. to 50s. of our present money. 1270 was a year of great scarcity. Wheat rose to the famine price of 16*l*. 16s. Again in 1317 it varied from 42s. to 12*l*.; but from 1336 to 1562 it varied from 8s. to 30s. per quarter. In later periods, from 1707 to 1710, the price varied from 28s. to 78s.; and, looking altogether at the extraordinary fluctuations that occurred during the whole period from 1202 to 1795, completely refutes the assertion, that a *free trade* would create more steady prices.

The whole annual produce of the land and labour of every country naturally divides itself into three parts—the rent of the land, the wages of labour, and the profits of stock; and constitutes a revenue of three different orders of people—to those who live by rent, to those who live by wages, and to those who live by profit. These are the three great original and constituent orders of every civilized society, from whose revenue that of every other order is ultimately derived.

Are we then at one fell swoop to destroy, or partially so, the *first* of these great constituent orders? and hence the *second* to a class—for they make it a class question—blown as it were into importance by the steam-engine?

I am the last to treat lightly the real importance of the manufactures of this country—he, indeed, must be worse than an idiot who would; but, knowing all the machinery in the world cannot make food, I repudiate the idea of adopting any *scheme* tending to deprive the country of means possessed within itself of supplying food for its population.

If the class seeking this destructive measure would but be honest enough to tell us what they mean, the public would be able to judge the merits of the question. It appears to me plainly this: not, as they speciously would have it appear, to benefit the *poor* by cheap bread, but by throwing our own land out of corn cultivation, make us customers to the foreign grower, whose prices would thereby be raised to such a pitch by the demand of 30,000,000 of people, as to render them *less able* to compete with the hitherto-cheap labour, the machinery, and capital of England. Their great aim is evidently to equalize the price of labour in England to that on the Continent. The measure of a free trade in corn may in some degree effect it; but in accomplishing it, as I have before observed, two great orders of the people are sacrificed—the one who lives by the rent, the other who lives by the wages. As regards the latter, if the price of some provisions are higher in England than in Poland and Prussia, what, I ask, is the difference in the price of labour? Why, to this extent—that if the English labourer would content himself to live the same as the Polish, he would in less than twenty years be an independent man (in means as well as liberty). Upon this point I cannot refrain from referring to the pungent anecdote of the London tradesman, of Fleet-street *(Times,* May 27)—of the Irishman and his eggs.

The next fallacy advanced is, that the corn laws are a modern imposition. Why, there has been a limit to importation into this country from the 3rd Edward IV cap. 2, 1461-4, when, if wheat was 6s. 8d. per quarter, equal to about 14s. present money, importation was prohibited; the price then stated to be about 10s. present money. The policy has been continued to the present, with continual variation.

Has it worked well or ill? Why, with a population increased nine-fold, the fluctuations in price since the introduction of the protecting scale of duties, has been far less than in any similar period of over-production and partially free trade, proving that the present corn laws have occasioned a better regulated supply. And to have required so little as England has of foreign corn, to meet the demand of such an increased population, it must be evident that the produce of the land has made great advances, though equally evident not in proportion to the unexampled increase of population, or in proportion to the increase of our manufactures. But it must be remembered, the manual labour of the field cannot be substituted by machinery, to which the manufacturer owes his gigantic strides. The taxes of the land are *direct* and *heavy*—those on manufacture *indirect* and *light;* the policy of which I doubt. I agree with Voltaire, who condemns any excessive taxation upon land, and wisely observes —"The refined industry of the merchant should pay more than the rude industry of the labourer."

The question at issue is—Is eight shillings a sufficient protection to the heavily-taxed agriculturist of this country? To solve this question, we must ascertain at what price wheat could have been shipped free on board, say at Dantzic, and delivered into the port of London, upon an average of years divested of exciting causes. Next, at what price can wheat, of similar quality, be grown in England, and delivered into the port of London.

First—it is in proof that the price of best wheat at Dantzic, not the general average but the best, weighing 61lbs. per bushel, does not exceed 30s.; second—that wheat of similar quality, on the average of seasons, cannot be grown in England and delivered into the port of London for less than 56s. per quarter: hence that 8s. fixed duty, with the freight of 4s.—and it is frequently done at 3s. 6d.—would be no protection. For if the remunerating price at Dantzic be 30s., and that in England be 56s., it is clear that a charge of 12s. only on the foreign would be *ruin,* and not *protection.*

Some writers have swollen the charge upon foreign wheat by attaching metage, lighterage, factors' charges, merchant profits, &c., forgetting that nine-tenths of the wheat of our growth sold in London is subject to the same charges. I am wrong in allowing even the full freight as an extra charge, for the freight and insurance of the Irish and Scotch are within 2s. of the freight at Dantzic.

It may be worth observing, that since 1796 the corn trade of Prussia has depended mainly on the commercial laws of other nations; and since 1800 has been governed almost exclusively by the fluctuating demand for England. This is shown by the fact, that when our averages have been so low as to impose a prohibitory duty, the prices at Dantzic assume their natural level, ranging from 18s. to 28s.; but as our averages rise, their prices advance more in proportion. In fact, when it arrived at the nominal duty of 1s., the difference between Dantzic and London approximated so closely as scarcely to pay for shipping: for instance, in the five years ending 1820, the highest price in London was 94s. 9d.; lowest, 65s. 7d. Highest price in Dantzic, 92s. 6d.; lowest, 42s. 8d.—In the five years ending 1830, the highest price in London was 76s. 7d.; lowest, 59s. 9d. Highest price in Dantzic, 72s. 1d.; lowest, 18s. 10d.

It has been stated that, with a free trade in corn, we should become the granary-keepers of Europe; but, in my opinion, we should be far less so than under the present law; for while there exists a fluctuation in price, hence a fluctuation in duty. Great inducement is held out to speculate in foreign corn, to be bonded at the low prices from 26s. to 30s., in anticipation of the higher averages coming out at the low duties of 1s., which inducement would cease upon a system of fixed duties.

As it is evident the Foreign and English prices would approximate too closely to justify speculation, amongst other *evils* resulting from a fixed duty would be, in the event of high prices, it could not be enforced—hence, as a question of revenue, quite a delusion. And as the 8s. fixed duty is proposed as a question of revenue, how will it operate? Why, from 1823 to 1840, 9,297,493 quarters of wheat were paid duty on, at the average of 5s. 5d. per quarter—hence, had there been a fixed duty of 8s., it would have produced an extra revenue only of 2s. 7d. a quarter above the present laws, equal to about 67,400*l.* per annum; and, including oats and other grain, would not exceed 100,000*l.*; and if more be anticipated, it can only be obtained at the sacrifice of the corn land of England; in fact, any *fixed duty* must be equally deceitful as a *revenue* or protection. A far more consistent course than the fixed duty would be the adoption of the simple scale of 1773, and in something like the form of the 31st George III. I am decidedly in favour of the sliding scale, with an alteration in the system of ascertaining the averages.

SCALE REDUCED AS UNDER :—

Present Scale.					Proposed Reduced Scale.	
Average per Quarter.			*Present Duty per Quarter.*		*Proposed Duty per Quarter.*	
s.		*s.*	*s.*	*d.*	*s.*	*d.*
At 42	and under	43	44	8	—	
43	..	44	43	8	—	
44	..	45	42	8	35	8
45	..	46	41	8	34	8
46	..	47	40	8	33	8
47	..	48	39	8	32	8
48	..	49	38	8	31	8
49	..	50	37	8	30	8
50	..	51	36	8	29	8
51	..	52	35	8	28	8
52	..	53	34	8	27	8
53	..	54	33	8	26	8
54	..	55	32	8	25	8
55	..	56	31	8	24	8
56	..	57	30	8	22	8
57	..	58	29	8	20	8
58	..	59	28	8	18	8
59	..	60	27	8	16	8
60	..	61	26	8	14	8
61	..	62	25	8	13	8
62	..	63	24	8	12	8
63	..	64	23	8	11	8
64	..	65	22	8	10	8
65	..	66	21	8	9	8
66	..	67	20	8	8	8
67	..	68	18	8	7	8
68	..	69	16	8	6	8
69	..	70	13	8	5	8
70	..	71	10	8	—	
71	..	72	6	8	—	
72	..	73	2	8	—	
73	..	—	1	0	—	

The effect anticipated by the proposed scale is, that when England, from an excess of production does not require foreign supply, thereby causing the averages to range from 42s. to 54s., the duty is sufficiently high to afford protection ; and when the averages rise beyond the medium price of 56s., the duty is sufficiently low to admit foreign supplies with benefit to the revenue, and affording to the consumer protection against the averages ranging much beyond 56s.

In examining this proposed scale, it must be borne in mind I have assumed the remunerating prices at Dantzic and England, for wheat of the same quality, to be 30s. and 56s.

In order to secure more correct returns, and prevent the entry in such returns of fictitious sales, and at the same time supply a revenue of above 1,000,000*l.*, I propose a charge of metage to the same extent as is levied in the port of London ; no return to be made on which the metage is not paid. The further detail of the scheme is here unnecessary ; it would be a tax so indirect as not to be felt by the consumer.

A Prussian writer upon the corn trade of Prussia observes — "The more fruitful the labours of a people are in the supply of their own wants, the higher will its prosperity rise, and the more firmly at the same time will it be rooted."

I would have England put this philosophy into practice ; and having the means, if properly developed, of not only supplying the wants of its present population but a far greater, every effort should be made to accomplish it.

There is in England at least 7,000,000 acres, and in Ireland, 5,000,000 acres of land comparatively unproductive, requiring the outlay of capital of from 3*l.* to 9*l.* per acre, equal to an annual rental of about 6s. per acre, to make it equal to the most productive in Europe. The process may justly be termed a modern system of improvement, viz., drainage. The effect produced in numerous cases has been more than three-fold the previous production, but the immediate outlay is too great to be accomplished for national purposes by private resources. To meet this exigency, an investment institution is now forming under the support of the leading agriculturists. The direct beneficial tendency of this institution, is the application of much spare capital of the country to the permanent improvement of the land ; hence, the development of the great resources of the country. With such means within ourselves, I cannot see the wisdom of laying the population at the mercies of foreign nations, for the mere prospect of sending our present surplus manufactures—for I can see nothing permanent in the benefit. The manufacturer is pressed by his over productions. The great competition amongst themselves, more than foreigners, drives them to the extreme of the modern school—"Quantity with small profits". Being pressed by present evils, he regards not the future consequence. The remedy he seeks, if obtained, will be but fleeting. His productions will again increase beyond their market. There is, in fact, no proportion between the increase of machinery and population, which are the elements of manufacture, and the increased demand for the goods manufactured. The discrepancy will soon again become manifest, with evils more augmented.

The only apology sufficient for trespassing so much on your columns, is, that the subject is a momentous one, and can scarcely be compressed into but few words.

I am, Mr. Editor,
Your very obedient servant,
Nine Elms. W. Ford.

TO THE EDITOR OF THE CAMBRIDGE CHRONICLE.

Sir,—I hope I shall be excused the liberty I am taking in addressing the landowners and occupiers, and my brother farmers of the county of Cambridge and isle of Ely, and the tradesmen of our county town, on the important crisis which has arrived, in which the interests of not only the landed gentry, tenant farmers, and agricultural labourers are threatened with destruction, but likewise the interests of those engaged in trade or professions, living in such agricultural towns as Cambridge, Bury, Hertford, &c. ; for I fearlessly contend that such towns are entirely dependent, directly or indirectly, on the agricultural interests for their prosperity. Le the coachmakers of such towns tell us who are their best customers ; let the cabinet-makers, the grocers, drapers, shoemakers, tailors, tradesmen of all sorts, and shopkeepers, strike the items from their books arising from the orders of farmers, landowners, and rural population generally, and what a miserable account would then appear, to say nothing of the resources from which the incomes of their few remaining customers would be derived. I hope the following figures will prove I do not overrate the importance of agriculture :—

The gross produce of manufactures is about..	£270,000,000
Ditto of agriculture ..	520,000,000

Nearly double.

Amount of capital invested in manufactures..	£250,000,000
Ditto in land	3,258,000,000

My object in thus addressing you is, that as we are likely very soon to have a general election, ministers having determined to appeal to the country on the question of their proposed alteration of the corn laws, &c., I am anxious that in discharging the all important duty of selecting good men and true to represent our interests in Parliament, we may make *no mistake* in doing so, I would ask the advocates of the proposed alteration if they honestly believe a fixed duty of 8s. per qr. on wheat, &c., would be a fair protection to the British farmer. To give an answer to such question, I believe it necessary to enquire what advantages the continental grower possesses over the British farmer that we should require any protection, and if those advantages are great would this low duty of 8s. be a fair protection. On referring to Jacob's Report, in speaking of the rent of land in Prussia, he states, " As far as my information can enable me to form a judgment, I should not estimate the average rent to exceed, if it reaches, 1s. 3d. per acre. An estate of medium soil, consisting of thin sandy soil, a few parts approaching to loam, containing 4,200 acres, was taken by the mortgagee for 3,000*l*. In the same part of Prussia another estate, one of the best in the district, with a good house, with all the buildings in good repair, and the land in a high state of cultivation, was offered for sale, and the price at which the contract has since been made was, I believe, between 5,200*l*. and 5,400*l*. The soil was a good sandy loam, chiefly arable, with some pasture, the extent 2,800 acres, so that this at 3 per cent. interest, would let for 1s. 3d. per acre rent." In Poland he states that " the average rent of eight million acres of land was about 3d. per acre ; a farm of 7,000 acres let for 170*l*. or about 6d. per acre ; another farm of 4,000 acres let for 180*l*., about 10d. per acre ; another estate consisting of 2,300 acres, two-sevenths of which are watered meadows on the banks of the Vistula, producing good hay, 300 acres woodland, the rest arable, a capital castle or mansion on it, let for 95*l*. per annum, or about 10d. per acre."

Now let us refer to his report for another item of expense—the price of labour in Prussia ; he states it at 5d. per day, and in Poland 3d. per day. He likewise informs us that from the time he left the Netherlands, through Saxony, Prussia, Poland, Austria, Bavaria, and Wurtemberg, till he entered France, he never saw either in the bakers' shops, in the hotels, or private houses, a loaf of wheaten bread. The inhabitants live in dwellings provided with few conveniences, on the lowest and coarsest food ; potatoes, rye, or buck wheat, are their chief and frequently their only food. Is this the state of living that the free-trade advocates would like to see our labourers reduced to in England ? God forbid their object should ever be obtained !

Let us compare the expenses, as far as rent and labour are concerned, with a fair statement of these two expenses in England, and we may fairly conclude that all other expenses of cultivation bear a similar proportion. It will appear that

The rent of land in Prussia averages	1s. 3d.	Average 10d. per acre.
Ditto in Poland	0s. 5d.	
Labour in Prussia average	5d. per day....	Average 4d. per day.
Ditto in Poland	3d. per day....	

Average rent of land in England 20s. per acre; labour 2s. per day.

Therefore, I think I am justified in stating, that if the rent of land in England is twenty-four times as much as those two corn-growing countries, and labour six times as much, and other expenses of cultivation bearing a similar proportion, I say I am justified in stating that the proposed fixed duties bear no proportion to the difference in the expenses of producing corn in England and the continent. I contend it is an insult to the farmers of England to make them such an offer, and call it a protecting one ; if we must have cheap corn in this our highly-taxed country—which I contend is impossible—for I fearlessly assert that you can neither have cheap labour nor cheap food in a country highly taxed, for the more you reduce either, you increase taxation by lessening the means of payment—but if we are to be called upon in England to raise corn as cheap as the continental growers, *burdened as we are with such an excessive amount of taxation, which is the cause, the fatal cause, that alone prevents the British cultivator from competing with the growers of corn in other countries where the weight of taxation is scarcely felt*—if we must be called upon to do so, let us have no false protection ; let us at once throw open the ports, not only to foreign corn, but foreign productions of every kind, whether in the shape of raw materials or manufactured goods ; let the five millions raised from the abominable and oppressive tax on malt,—the unjustifiable tax on the natural and national beverage of the people—be swept away : let the revenue, excise, and custom-house officers be no longer known in the land ; let your custom-houses be thrown open ; let the public creditor know and feel that with this state of things his security is gone, and that England, once the merry, merry England, and the proud mistress of the seas, has at last shamefully and disgracefully compounded with her creditors, and as sure " as light comes with day," so certain is it that if we must have a free trade in corn, nearly all the above circumstances will happen. *I boldly assert that never in the course of England's history did she stand possessed of a body of men, as farmers, who exerted themselves to the extent we have done to deserve a continuation of the present protection.* Have we not availed ourselves of every suggested improvement to increase the production of our native land? and now, when we have succeeded in doing so to an extent never contemplated by our ancestors, is it fair and just to stop us in our onward progress, for we have yet a wide field before us, in respect to improvement; and though the annual production of our country has been nearly doubled within the memory of man, still I contend that if we have the present corn laws continued to us, within a less period of time her produce will be increased in an equal ratio.

And shall we foolishly and (as Lord Melbourne has said) " *madly*" repeal these laws, which alone are the means of securing fair remuneration to the farmer for the employment of his skill and capital, inducing him to give constant employment to a happy and contented peasantry, and by such means raise an abundant supply of food for all classes, making our native soil the channel through which a constantly increasing flow of wealth may be poured upon our country, instead of seeking our supply of the necessaries of life from other countries, with whom we may be called upon to wage war, and who would then have the means of starving us into submission ?

That the Corn Laws have not operated to the injury of the manufacturers we may fairly assume, when we know that the princely and overgrown fortunes of many of them have been acquired under and during the operation of these laws. How many members are there in the present House of Commons who a few years ago started in trade and commerce, with no greater capital than many of our largest occupiers in this country in their various occupations employ, but who have now amassed immense wealth, and are become members of Parliament? But the farmer has been again committing to the earth, in permanent improvements, those small accumulations he may have made, trusting in the honesty of the earth, and the continuation of that protection which alone induced him to expend his money in the permanent improvement of the land.

I should hope my brother farmers, in discussing this question, will never be led way by the foolish and absurd notion that a fixed duty would be better than the present graduated scale ; for rest assured that the higher the amount of fixed duty, the nearer you approach to a total repeal. Suppose a fixed duty of 20s.

per quarter on wheat—and this would not be too high according to the difference in the expense of raising corn in England and the Continent—would not the large capitalists, on hearing that our crops, from causes we cannot guard against, were likely to be deficient, would they not buy up all the foreign corn they could lay their hands on? and when corn had risen to a very high price, would they then sell to a suffering and starving people? No! if they could gain cent. per cent. they would not sell, until clamour and disaffection among the people would induce the Government of the day to issue an order in Council, admitting their corn duty free. Then away goes our protection, for they would not again put on the duty. It is impossible, in my opinion, to adopt any plan more fair and just, both to the grower and consumer, than our graduated scale of duties; for when corn is high, no one can ask for a repeal of the Corn Laws, because no duty exists, except a mere nominal one of 1s. per quarter; if the duty is high, it is because the people are fed by our own productions at fair prices.

But if the reason we are called upon to repeal the Corn Laws is, that after a long period of peace, other countries very naturally have turned their attention to the arts and sciences, and are now manufacturing goods for their own people; and if they can do so cheaper (on account of the little taxation they are burthened with) than our own manufacturers can supply them with, I would ask, is that a reason we should pass laws to ruin our agricultural interest, the interest and prosperity of our agricultural towns, and the interest of those who manufacture for our home consumption? If so, we should pause and well consider before we alter laws which have worked well for all classes.

But the grand question is, how are we to prevent the repeal of the Corn Laws? Why, by every landowner and farmer fearlessly doing his duty in the coming struggle. Let the free trade advocates appeal to the country. Then is the time for the agricultural interest to rise in her giant strength, and use every legitimate and constitutional means to secure the return to Parliament of men who will pledge themselves to support the present Corn Laws, in preference to any fixed duty, however high in amount. I think I hear many belonging to the agricultural interest say, "How are we to do this? We shall take care and have *no mistake* in our counties! But the towns are against us." What towns? Oh! our market towns." And pray whose fault is it that they are anxious to commit so suicidal an act? Upon whom are they dependent for their prosperity? Why, upon the landowners, the farmers, the agricultural labourers, and others dependent upon agriculture, are the tradesmen, &c., of our agricultural towns dependent for the prosperity they enjoy. Use, then, the power you possess—use it fearlessly and firmly—let no false delicacy prevent you; for the question now is—to live or not to live—that is the question; to live by the employment of our skill and capital, or become, with our labourers, inmates of those workhouses we have been called upon to erect.

A kind-hearted Government having declared that you shall not allow an able-bodied labourer relief out of the workhouse, are now, with equal goodness of feeling, telling us they will pass laws that will compel half the rural population of the kingdom to be incarcerated within the walls of their workhouses, for no fault, vice, or failing of their own, but through the fault and failing of their rulers.

But this state of things we can avert, by using legitimately and constitutionally the power we possess. Let me not be misunderstood—God forbid I should advise that power to be used for party purposes. But the time is come when we shall be under the necessity of using it to preserve ourselves, our wives, families and labourers from ruin; for, though the labourers of England hold as mortgagees the whole surface of the soil of England, yet they will cease to live happy and contented when employment ceases.

Use, then, your power, I say to the agricultural body, but not politically so. Take any agricultural town, for instance, that returns two members, the one being friendly to the present Corn Laws, the other for a repeal or alteration of them—I care not be they Whigs or Tories. Let the agricultural interest of the neighbourhood earnestly entreat of every man who has a vote for that town, and with whom he deals, not to support the advocates for the repeal of those laws which have enabled you and your family to deal with him for so long a period of time, but to select and vote for a man of his own political principles; but let him be one ready to pledge himself to support the present Corn Laws against all opposition. This is a line of proceeding which you are called upon by the circumstances of the times to adopt, and woe to England's prosperity if it is not effectually carried out.

I remain, Mr. Editor, with thanks for the able manner in which you advocate the interests of the British farmer, your humble servant, S. J.

May 18th, 1841.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

Sir,—It is evident that an alteration in the present corn laws will shortly take place; and, as I am of opinion that a sliding scale (under a correct system of taking the averages) is in every respect preferable to a fixed duty, I venture to hand you, for the consideration of your numerous readers, a scale of duties, which I believe would give sufficient protection to our home agriculture, and also meet the views of many of those who now support the government measure:—

When under and between.			Proposed.	Present.		Difference.	
s.		s.	s.	s.	d.	s.	d.
50	and under	51	15	36	8	21	8
51	..	52	14	35	8	..	
52	..	53	13	34	8	..	
53	..	54	12	33	8	.	
54	..	55	11	32	8	..	
55	..	56	10	31	8	..	
56	..	57	9	30	8	..	
57	..	58	8	29	8	..	
58	..	59	..	28	8	20	8
59	..	60	..	27	8	19	8
60	..	61	..	26	8	18	8
61	..	62	..	25	8	17	8
62	..	63	..	24	8	16	8
63	.	64	..	23	8	15	8
64	..	65	..	22	8	14	8
65	..	66	7	21	8	..	
66	..	67	6	20	8	..	
67	..	68	5	18	8	13	8
68	..	69	4	16	8	12	8
69	..	70	3	13	8	10	8
At	and above	70	2	10	8	8	8

It will be seen that at and above 70s. per quarter, the duty would be 2s.; while, under the present system, it is 10s. 8d. But I venture to say—and many of those thoroughly acquainted with the subject will agree with me—that when the great stocks of foreign wheat were liberated on the two last occasions (first at 1s. and afterwards at 2s. 8d.), had the returns been correct, the average price would not have been more than 70s.

The adoption of the above scale would, in my humble opinion, ensure a more regular supply of foreign grain when wanted, and also materially prevent the sudden derangements in our monetary system which we have so lately witnessed.

I am, sir, yours truly,

A Cumberland Farmer.

AMMONIA;

ITS PROPERTIES AND RELATIONS TO VEGETABLE LIFE.

(FROM LECTURES ON AGRICULTURAL CHEMISTRY AND GEOLOGY.)

Ammonia is a compound of hydrogen and nitrogen. It is possessed of many interesting properties, and is supposed to perform a very important part in the process of vegetation. It will be proper, therefore, to illustrate its nature and properties with considerable attention.

Ammonia, like the nitrogen and hydrogen of which it is composed, is a colourless gas, but, unlike its elements, is easily distinguished from all other gaseous substances by its smell and taste.

It possesses a powerful penetrating odour (familiar to you in the smell of hartshorn and of common smelling salts), has a burning acrid alcaline* taste, extinguishes a lighted taper as hydrogen and nitrogen do, but does not itself take fire like the former. It instantly suffocates animals, kills living vegetables, and gradually destroys the texture of their parts.

It is absorbed in large quantities by porous substances, such as charcoal — which, as already stated, absorbs 95 times its own bulk of ammoniacal gas. Porous vegetable substances in a decaying state likewise absorb it. Porous soils also, burned bricks, burned clay, and even common clay and iron ochre, which are mixed together on the surface of most of our fertile lands—all these are capable of absorbing or drinking in, and retaining within their pores, this gaseous substance, when it happens to be brought into contact with them.

But the quantity absorbed by water is much greater and more surprising. If the mouth of a bottle filled with this gas be immersed in water, the latter will rush up and fill the bottle almost instantaneously; and if a sufficient supply of ammonia be present, a given quantity of water will take up as much as 670 times its bulk of the gas.

This solution of ammonia in water is the spirit of hartshorn of the shops. When *saturated*† it is lighter‡ than pure water, has the pungent penetrating odour of the gas, and its hot, burning, alcaline taste—is capable of blistering the skin, and decomposing or destroying the texture of animal and vegetable substances.

You will remark here the effect which combination has in investing substances with new characters. The two gases hydrogen and nitrogen, themselves without taste or smell, and absorbed by water in minute quantity only, form by their union a compound body remarkable both for taste and smell, and for the rapidity with which water absorbs it.

Ammonia possesses also alcaline properties,§ it restores the blue colour of vegetable substances that have been reddened by an acid, and it combines with acid substances to form salts.

Among gaseous substances, therefore, there are some which, like carbonic acid, have a sour taste and redden vegetable blues; others which, like ammonia, have an alcaline taste and restore the blue colour; and a third class which, like oxygen, hydrogen, and nitrogen, are destitute of taste and do not affect vegetable colours. These last are called *neutral* or indifferent substances.

Ammonia, as above stated, combines with acids and forms salts, which at the ordinary temperature of the atmosphere are all solid substances. Hence if carbonic acid gas be mixed with ammoniacal gas, a white cloud is formed consisting of minute particles of solid *carbonate* of *ammonia*—the smelling salts of the shops. Hence also a feather dipped into vinegar or dilute muriatic acid (spirit of salt), and then introduced into ammoniacal gas, forms a similar white cloud, and becomes covered with a white down of solid *acetate* or of *muriate* of ammonia (sal ammoniac). The same appearance is readily seen by holding the feather to the mouth of a bottle containing hartshorn (liquid ammonia), from which ammoniacal gas continually escapes, and by its lightness rises into the air, and thus comes in contact with the acid upon the feather.

The fact of the production of a solid body by the union of two gases (ammonia and carbonic or muriatic acid gases) is one of a very interesting nature to the young chemist, and presents a further illustration of the *changes* resulting from chemical combination as explained in the previous lecture.

Ammonia is little more than half the weight* of common air, hence when liberated on the earth's surface it readily rises into and mingles with the atmosphere. It consists of hydrogen and nitrogen united together in the proportion of three equivalents of hydrogen (3 H or H_3) and one of nitrogen (N), and hence it is represented by the symbol ($N + 3\ H$), or more shortly by NH_3. 100 parts by weight contain 82½ of nitrogen and 17½ of hydrogen.†

In nature, ammonia exists in considerable quantity. It is widely, almost universally, diffused, but is not known to form large deposits on any part of the earth's surface, or to enter as a constituent into any of the great mineral masses of which the crust of the globe is composed. It exists most abundantly in a *state of combination*—in the forms, for example, of muriate (sal ammoniac), of nitrate, and of carbonate of ammonia. It frequently escapes into the atmosphere in an uncombined state, especially where animal matters are undergoing decay, but it rarely exists in this free state for any length of time. It speedily unites with the carbonic acid of the air, with one or other of the numerous acid vapours which are continually rising from the earth, or with the nitric acid which is formed at the expense of the nitrogen and oxygen of which the atmosphere consists.

The influence of ammonia on vegetation appears to be of a very powerful kind. It seems not only to promote the rapidity and luxuriance of vegetation, but to exercise a powerful control over the functions of vegetable life. In reference to the nature and extent of this action, into which we shall hereafter have occasion to enquire, there are several special properties of ammonia which it will be of importance for us previously to understand.

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* The term *alcaline*, as applied to taste, will be best understood by describing it as a taste similar to that of the common soda and pearl ash of the shops.

† That is when gas is supplied till the water refuses to take up any more.

‡ Its specific gravity is 0.875, water being 1.

§ In the previous lecture the term *acid* was explained as applying to substances possessed of a sour taste, and capable of reddening vegetable blues or combining with *bases* (potash, soda, magnesia, &c.) to form *salts*; *alcalies* are such as possess an alcaline taste (see previous note), restore the blue colour to reddened vegetable substances, or combine with *acids* to form *salts*. Of salts, nitrate of soda, saltpetre (nitrate of potash), and glauber salts (sulphate of soda), are examples.

* More nearly three-fifths, its specific gravity being 0·59, that of air being 1.

† Correctly 82·545 and 17·455 respectively.

1°. It has a powerful affinity[*] for acid substances. Hence the readiness with which it unites with acid vapours when it rises into the atmosphere. Hence also when formed or liberated in the soil, in the fold-yard, in the stable, or in compost heaps, it unites with such acid substances as may be present in the soil, &c., and forms saline compounds or *salts*. All these salts appear to be more or less influential in the processes of vegetable life.

2° Yet this affinity is much less strong than that which is exhibited for the same acids by potash, soda, lime, or magnesia. Hence if any of these substances be mixed or brought into contact with a salt of ammonia, the acid of the latter is taken up by the potash or lime, while the ammonia is separated in a gaseous state. Thus when sal ammoniac in powder is mixed with twice its weight of quicklime, ammoniacal gas is liberated in large quantity. This is the method by which pure ammonia is generally prepared; and one of the *many* functions performed by lime when employed for the improvement of land, especially on soils rich in animal and vegetable matter, is that of decomposing the salts, especially the organic salts, of ammonia,—as will be more fully explained when we come to treat at length of this important part of agricultural practice.[†]

3°. The salts which ammonia forms with acids are all, like ammonia itself, very soluble in water. Hence two consequences follow. First, that which rises into the air in the form of gas, and there combines with the carbonic or other acids, is readily dissolved, washed out and brought to the earth again by the rains and dews;—so that at the same time the air is purified for the use of animals, and the ammonia brought down for the use of plants. And second, whatever salts of ammonia are contained in the soil, being dissolved by the rain, are in a condition to be taken up, when wholesome, by the roots of plants; or to be carried off by the drains, when injurious to vegetation.

4°. I have already alluded to the fact of this gas being absorbed by porous substances, and to its presence in consequence, in porous soils, and in burned bricks and clay. With the purer kinds of unburned clay, however, and with the oxide of iron contained in red (or ferruginous)[‡] soils, ammonia is supposed to form a chemical compound of a weak nature. In consequence of its affinity or feeble tendency to combine with these substances, they attract it from the air, and from decaying animal or vegetable matters, and retain it more strongly than many porous substances can,—yet with a sufficiently feeble hold to yield it up, readily as is supposed, to the roots of plants, when their extremities are pushed forth in search of food. In this case the carbonic, acetic and other acids given off, or supposed to be given off by the roots, exercise an influence to which more particular allusion will be made hereafter.

6°. In the state of carbonate it decomposes gypsum, forming carbonate of lime (chalk) and sulphate of ammonia.[*] The action of gypsum on grass lands, so undoubtedly beneficial in many parts of the world, has been ascribed to this *single* property; it being supposed that the sulphate of ammonia formed is peculiarly favourable to vegetation. This question will come properly under review hereafter. I may here, however, remark that if this be the *sole* reason for the efficiency of gypsum, its application ought to be beneficial on all lands not already abounding either in gypsum or in sulphate of ammonia. But if the results of experimental farming in this country are to be trusted, this is by no means the case. The action neither of this, nor probably of any other inorganic substance applied to the soil, is to be explained by a reference in *every* case to one and the *same* property only.[†]

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[*] By *affinity* is meant the tendency which bodies have to unite and to remain united or combined. Thus ammonia forms a solid substance with the vapour of vinegar the moment the two substances come into contact; they have, therefore, a strong tendency to unite, or an *affinity* for each other.

[†] See Lecture "*On the use of lime.*" Owing to this property the action of lime upon compost heaps is often injurious, by causing the evolution of the ammonia produced during the decomposition of the animal matters they contain. This escape of ammonia, even when imperceptible by the sense of smell, is easily detected by holding over the heap a feather dipped in vinegar or in spirit of salt (muriatic acid), when white fumes are immediately perceived if ammonia be present.

[‡] Soils reddened by the presence of oxide of iron.

[*] Gypsum is *sulphate* of lime, consisting of sulphuric acid (oil of vitriol) and quicklime. Carbonate of ammonia consists of carbonic acid and ammonia. When the two substances act upon each other in a moist state, the two acids change places, the sulphuric acid as it were *preferring* the ammonia, the carbonic acid the lime.

[†] Liebig says—"the striking fertility of a meadow on which gypsum is strewed depends *only* on its fixing in the soil the ammonia of the atmosphere, which would otherwise be volatilized with the water which evaporates."(a)—*Organic Chemistry applied to agriculture*, p. 86.

When we come to consider the subject of mineral manures in general, we shall study more in detail the specific action of gypsum in promoting vegetation—a very simple calculation, however, will serve to show that the above theory of Liebig is far from affording a satisfactory explanation of all the phenomena.

Supposing the gypsum to meet with a sufficient supply of ammonia in the soil, and that it exercises its full influence—100lbs. of common *unburned* gypsum will fix or form sulphate with nearly 20lbs. of ammonia containing 16½lbs. of nitrogen. One hundred weight, therefore (112lbs.), will form as much sulphate as will contain 22½lbs. of ammonia, and if introduced without loss into the interior of plants will furnish them with 18½lbs. of nitrogen.

1°. In the first volume of British Husbandry, pp. 322, 323, the following experiment is recorded:—

Mr. Smith, of Tunstal, near Sittingbourne, top-dressed one portion of a field of red clover with powdered gypsum, at the rate of five bushels (or

(a) By *fixing* is meant the forming of *sulphate* with the ammonia. Rain water is supposed to bring down with it *carbonate of ammonia* (common smelling salts), which acts upon the *sulphate of lime* (gypsum) in such a way that *sulphate of ammonia* and *carbonate of lime* are produced. The carbonate of ammonia readily volatilizes or rises again into the air—the sulphate does not; hence the use of the word *fix*.

7°. The presence or evolution of ammonia in a soil containing animal and vegetable matter in a decaying state, induces or disposes this matter to attract oxygen from the air more rapidly and abundantly. The result of this is, that organic acid* compounds are formed, which combine with the ammonia, and form ammoniacal salts. On the decomposition of these salts by lime or otherwise, the organic acids which are separated from them are always more advanced towards that state in which they again become fit to act as food for plants.

8°. But the most interesting, and perhaps the most important property of ammonia, is one which I have already had occasion to bring under your notice, as possessed by water also, and as peculiarly fitting that fluid for the varied functions is performs in reference to vegetable life. This property is the ease with which it undergoes decomposition, either in the air, in the soil, or in the interior of plants.

In the air it is diffused through, and intimately mixed with, a large excess of oxygen gas. In the soil, especially near the surface, it is also continually in contact with oxygen. By the influence of electricity in the air, and of lime and other bases in the soil, it undergoes a constant though gradual decomposition (oxidation), its hydrogen being chiefly converted into water, and a portion of its nitrogen into nitric acid.†

In the interior of plants this and other numerous and varied decompositions in all probability take place.

The important influence which ammonia appears to exercise over the growth of plants—the evidence for which I shall presently lay before you—is only to be explained on the supposition

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four hundred weight(a)) per acre, and compared the produce with another portion of the same field, to which no manure had been applied. The first crop was cut for hay, and the second ripened for seed. The following were the comparative results per acre:—

	HAY CROP.		SEED.			STRAW.		
	cwt.		*qrs.*	*lbs.*		*cwt.*	*qrs.*	*lbs.*
Gypsumed........	60	....	3	21	....	22	3	12
Unmanured	20	....	0	20	....	5	0	0
Excess of produce	40	....	3	1	....	17	3	12

The excess of produce in all the three crops upon the gypsumed land is very large: let us calculate how much nitrogen this excess would contain. In a previous lecture (II. p. 36) it was stated as the result of Boussingault's analyses, that dry clover seed contained seven per cent. of nitrogen, and the same experimenter found in the hay of *red clover* 1½ per cent.(b) (or 70 and 15lbs. respectively in 1000.)

The seed as it was weighed by Mr. Smith would still contain one-ninth of its weight of water, and consequently only 6⅓ per cent. of nitrogen. Let it be taken at six per cent., and let the *straw* be supposed to contain only one per cent. of nitrogen, the quantity of this element being found to diminish in the grasses after the seed has ripened, and averaging one per cent. in the straw of wheat, oats, and barley; the weight of nitrogen reaped in the whole crop will then be as follows:—

1. 40 cwt. of hay (4480lbs.) at 1½ per cent. of nitrogen, contain	67lbs.
2. 85lbs. of seed at 6 per cent. contain	5lbs.
3. 17 cwt. 3 qrs. 12lbs. or 2000lbs. of straw, at 1 per cent., contain	20lbs.
Total nitrogen in the excess of crop	92lbs.

But, as above shewn, the five bushels or four cwt. of gypsum could fix only 90lbs. of ammonia containing 74lbs. of nitrogen; *leaving, therefore, 18lbs., or one-fifth of the whole, to be derived from some other source.*

Now this result supposes that none of the gypsum or sulphate of ammonia was carried away by the rains, but that the whole remained in the soil, and produced its greatest possible effect on the clover, *and all in one season.*

But the effect of the gypsum does not disappear with the crop to which it is actually applied. Its beneficial action is extended to the succeeding crop of wheat, and on grass lands the amelioration is visible for a succession of years. If, then, the increased produce of a single year may contain more nitrogen than the gypsum can be supposed to yield, this substance must exercise some other influence over vegetation than is involved in its supposed action on the indefinite quantity of ammonia in the atmosphere.

2°. Again, Mr. Barnard, of Little Bordean, Hants, applied 2½ cwt. per acre on two-year-old sainfoin, on a clayey soil. The increased produce of the first cutting was a ton per acre, and in October fully a ton, the undressed part yielding scarcely any hay at all, while the dressed part gave 1¾ tons. The second year no gypsum was applied, and the difference is said to have been at least as great.

Supposing the increased produce in all to have been four tons of hay, and the nitrogen it contained to have been only one per cent., the four tons (8960 lbs.) would contain about 90lbs. of nitrogen. But 2½ cwt. would fix only 46lbs. of nitrogen in the form of ammonia; and therefore, supposing it to have produced its maximum effect, *there remain 44lbs., or nearly one-half of the whole unaccounted for by the theory.*

I would not be understood to place absolute reliance on the results of the above experiments, but the way in which such results may be easily applied for the purpose of testing theoretical views will, I hope, convince the intelligent practical agriculturist how important it is, that the results of some of the experiments he is every year making should be accurately determined by *weight and measure.* By this means data would gradually be accumulated, on which we might hope to found more unexceptionable explanations of the phenomena of vegetation than the results obtained in our laboratories have hitherto enabled us to advance.

In a subsequent note it will be shown that the mode in which the nitrates of soda and potash act—in other words the theory of their action upon vegetation—may be tested by a similar simple calculation, and the importance of precise experiments made on the farm will then still further appear. It is in the hope of inducing some of my readers to make comparative trials and publish *accurate* results, that I have introduced into the Appendix (No. I.) an outline of the mode in which such experiments may most usefully be performed.

(a) A ton of pure gypsum, when crushed, will yield 25 bushels. It should, however, always be applied by *weight.*

(b) Ann. de Chim. et de Phys., lxiii., p. 225.

* Organic *acids* generally contain more oxygen in proportion to their carbon and hydrogen than those which are *alkaline* or *neutral.*

† It will be remembered that ammonia is represented by NH_3, water by HO, and nitric acid by NO_5. It is easy to see, therefore, how, by means of oxygen, ammonia should be converted into water and nitric acid.

that numerous transformations of organic substances are effected in the interior of living vegetables, which transformations all imply the separation from each other, or the *re*-arrangement of the elements of which ammonia consists. In the interior of the plant we have seen that water, ever present in great abundance, is also ever ready to yield its hydrogen or its oxygen as occasion may require, while these same elements are never unwilling to unite again, for the formation of water. So it is, to a certain degree, with ammonia. The hydrogen it contains in so large a quantity is ready to separate itself from the nitrogen in the interior of the plant, and in concert with the other organic elements introduced by the roots or the leaves, to aid in producing the different solid bodies of which the several parts of plants are made up. The nitrogen also becomes fixed in the coloured petals of the flowers, in the seeds, and in other parts, of which it appears to constitute a necessary ingredient, passes off in the form of new compounds, in the insensible perspiration or odoriferous exhalations of the plant, or returning with the downward circulation, is thrown off by the root into the soil from which it was originally derived. Much obscurity still rests on the actual transformations which take place in the interior of plants, yet we shall be able in a future lecture, I hope, to arrive at a tolerably clear understanding of the general nature of many of them.

Such are the more important of those properties of ammonia to which we shall hereafter have occasion to advert. The sources, remote as well as immediate, from which plants derive this and the other compounds we have described as contributing to the nourishment and growth of plants, will be detailed in a subsequent section.

LORD WESTERN'S DRILL AND HORSE HOE.

(FROM AN ESSEX PAPER.)

The first operation which attracted the notice of the company, assembled on the 3rd May to witness the principle of Lord Western's patent drill applied to horse-hoeing, was the drill applied to horse-hoeing beans: in this the whole frame-work of the drill is used, but of course if it were considered necessary, the weight might be diminished by detaching the box; and the improvement effected by his lordship consists in removing the coulters, and substituting for them wrought-iron hoes, with a sort of fin on each side running to the required width at the heel; this fin is securely fastened by a very simple process —it drops into the hoe, and is effectually secured by a wooden peg driven through both. The hoes of course can be easily shifted higher or lower, according to the depth to which they are required to penetrate the soil. The beans had been planted by the drill; and thus with a horse in each furrow, the hoes skimmed down at a fair depth between the rows, and effectually cut up every weed, the work, by means of the wheel or "helm" by which his lordship's drill is steered, being executed with such nicety that throughout the day we did not find that a bean had been cut up. We understand that sixteen acres could be thus hoed in a day; and it was the general opinion, that the plan was excellently adapted to land laid out in so level and workman-like a manner as his lordship's; but it was suggested that on some lands it might be necessary to have the cross-bar with a joint in the centre, and a screw by which the ends could be quickly lowered, so that on a "lopsided" stetch the hoes could be brought down to perform their work, when if the bar were straight they would pass over one part without touching the surface.

The same principle was applied to the hoeing of peas with equal success; and it will be evident that it is applicable to any other drilled crops. The company afterwards proceeded to another field to witness the drilling of mangel, which is performed by the patent drill, four coulters being set at the necessary width, so that the same number of ridges are covered at a time. His lordship's crops in the adjoining fields, and the way in which the drilling the barley was performed, elicited much admiration.

The party then returned to the house, where, by the hospitable attention of his lordship, an excellent luncheon was provided, and in a glass of the choice wine with which it was accompanied, due honour was done to the health of the veteran promoter and champion of agriculture. The absence of his lordship from the table was much regretted, because it was felt he might have suggested the best plan of resisting the threatened inroad upon the corn laws, but it was the general opinion that petitions of a decided character should be promptly got up.

Before the company quitted the premises, they inspected his lordship's stock, the high character of which we need not describe; and some gentlemen particularly noticed the great perfection to which the Anglo-Merino sheep are now brought.

Since the above was written, we have received the following letter from his lordship:—

"SIR,—Having given through the medium of your paper a *public* invitation to my brother farmers, to inspect my drilling, and horse hoeing operations, I am anxious you should allow me through the same medium to give as perfect a description as I can of the machinery by which these operations are effected. I fear, however, the present moment is very unpropitious to my hope of fixing any zealous attention of farmers on this, or indeed any similar efforts, to improve the agriculture of the country; their minds are too anxiously employed by the announcement of ministers of their intention to alter the corn laws. I participate deeply their anxiety, but this is not the time to dwell on the subject, and I proceed, therefore, immediately to the work I have undertaken, namely, a description of my improvement upon drill machinery. I had the pleasure of seeing a considerable number of practical farmers here on Monday, who, in spite of the anxiety which pervaded their minds from the cause above alluded to, did most attentively and critically examine the operations going forward, and I think I may safely say, that they all allowed that the machinery fully answered the promise made, and that the work was perfectly done.

I am, yours, &c.,

Felix Hall, May 4. WESTERN."

THE "FIXED" DUTY.—We understand that Government has given the hint to various of its friends who have connections in the country, that they may write down to their neighbourhoods, that a lower duty than 12s. on foreign wheat is not really intended. The duty of 8s. they say has been proposed in order to allow for some yielding to the opposition party in committee. They expect that some friend of the agricultural interest will propose 15s. or 16s. instead of 8s., and they are to meet such a proposition half-way, by allowing the duty to stand at 12s.—*Morning Post.*

BANKS OF ISSUE—FIRST REPORT.

The Select Committee of Secrecy appointed to inquire into the Effects produced on the Circulation of the Country by the various Banking Establishments issuing Notes payable on demand—and who were required to report from time to time to the house—have considered the matters referred to them, and have agreed to the following their first report:—

Your committee having examined witnesses connected with banks of issue in all parts of the United Kingdom, are of opinion that it is expedient that an account should be published more frequently than is now required, showing with greater accuracy, and at shorter intervals, the average amount of promissory notes payable on demand, which are in circulation in England and Wales, together with the average of bullion in the Bank of England; and that at the same time there should be published a similar account of the average amount of bank notes in circulation in Scotland and Ireland.

The witnesses whom they have examined unanimously concur in the opinion that there would be no objection on the part of the various banks of issue to such a publication, and many of them state that it is highly desirable.

Your committee have therefore thought it advisable, without waiting till they have brought their proceedings to a close, to report their opinion upon this point to the house, and to suggest the expediency of passing a bill without delay, amending and extending the provisions of the act 3 and 4 Will. IV., c. 83, for the purpose of obtaining the requisite return from all banks of issue, and of providing for the publication of such an account.

June 4, 1841.

Since the presentation of this report a short bill has been brought into parliament, making it imperative on all bankers in the United Kingdom to keep accounts of the amount of their promissory notes in circulation, and to make returns thereof monthly. The Bank of England is to make similar returns monthly, together with a statement of the amount of the bullion in the Bank during the preceding month; these returns to be published in the *Gazette* in every month. The bill was prepared and brought in by Mr. Charles Wood, the Chancellor of the Exchequer, and Sir Robert Peel.

PARLIAMENTARY RETURNS OF WHEAT AND OTHER GRAIN.

(Extracts.)

ACCOUNTS RELATIVE TO WHEAT AND OTHER GRAIN, WHEAT MEAL OR FLOUR, IMPORTED INTO AND EXPORTED FROM GREAT BRITAIN, FROM THE YEAR 1813 TO 1840, AND TO FOREIGN WHEAT AND FOREIGN AND COLONIAL WOOL BROUGHT INTO HOME CONSUMPTION IN 1840, IN CONTINUATION OF FORMER RETURNS.

An Account of the Average Price of Wheat in Great Britain in the year 1840, together with the total number of Quarters of Foreign and Colonial Wheat and Wheat Flour imported in the same year, distinguishing Foreign from Colonial, and the quantities entered for Home Consumption: also the Average Prices of Wheat at Dantzig, Odesssa, and Rotterdam, for the same year, as far as they can be ascertained.

	Qrs.
Total Number of Quarters of Wheat and Wheat Flour Imported	2,433,202
Total Number of Quarters of Foreign Wheat and Wheat Flour Imported	2,284,482
Total Number of Quarters of Colonial Wheat and Wheat Flour Imported..............	148,720
Total Number of Quarters of Wheat and Wheat Flour Imported and Entered for Home Consumption....................	2,401,366

	s.	d.
Average Price of Wheat in Great Britain......	66	4
Average Price of Wheat at Dantzig	39	6
Average Price of Wheat at Odessa............	24	9
Average Price of Wheat at Rotterdam	49	11

WILLIAM IRVING.

An Account showing the total quantities of Wheat and Wheat Flour imported from Foreign Countries and from British Colonies, and upon which Duty has been paid since the passing of the Act 9th George IV. c. 60; showing also the total quantity of Foreign and Colonial Wheat and Flour respectively, which has been subjected to each separate rate of Duty.

	Quantities entered for Home Consumption in the United Kingdom from the passing of the Act 9 George IV., cap. 60 (15th July, 1828), to the 5th January, 1841.	
Foreign.	Wheat.	Wheat Flour.
£. s. d.	Qrs.	Cwts.
When the Rate of Duty on Wheat was— 0 1 0 per Quarter........	3,907,981	1,276,731
0 2 8 —	2,788,277	835,406
0 6 8 —	1,994,102	518,897
0 10 8 —	783,280	238,592
0 13 8 —	548,348	466,432
0 16 8 —	298,677	213,707
0 18 8 —	76,200	44,788
1 0 8 —	377,667	96,538
1 1 8 —	107,005	5,861
1 2 8 —	13,664	5,940
1 3 8 —	138,775	56,530
1 4 8 —	37,329	2,070
1 5 8 —	27,153	1,555
1 6 8 —	4,724	654
1 7 8 —	1,882	690
1 8 8 —	134,275	1,377
1 9 8 —	61,649	101
1 10 8 —	13,956	756
1 11 8 —	1,496	87
1 12 8 —	432	63
1 13 8 —	908	511
1 14 8 —	385	164
1 15 8 —	154	24
1 16 8 —	326	42
1 17 8 —	314	24
1 18 8 —	154	72
1 19 8 —	151	51
2 0 8 —	3	—
2 2 8 —	7	3
2 3 8 —	4	7
2 4 8 —	16	13
2 5 8 —	62	33
2 6 8 —	10	155
2 7 8 —	7	17
2 8 8 —	3	2
2 9 8 —	2	36
2 10 8 —	8	56
Admitted at an *ad valorem* duty, being damaged................	2,629	—
Admitted Duty free, being damaged..........................	—	350
Admitted Duty free, for Seed ..	71	—
Total	11,322,085	3,768,335

British Colonial.

When the Rate of Duty on Wheat was 0 6 per qr.	129,858	426,809
5 0 —	393,407	596,996
Total	523,265	1,023,805

WILLIAM IRVING,
Inspector-General of Imports and Exports.
Inspector-General's-office, Custom-house, London.
June 5, 1841.

MAIDSTONE FARMER'S CLUB.

The usual monthly meeting of this flourishing society took place on Thursday week.

The minutes of the last meeting having been read, and several new members elected,

The **Chairman** (C. G. Whittaker, Esq.) said that it had occurred to him since the last meeting, that in their discussions it was most advisable that the members who took part in them should be careful to avoid all political allusions—(*Hear, hear*). He did not allude to any particular member, nor speak retrospectively, but prospectively; and as a period of some political excitement was probably approaching, he thought it very important that great caution on this subject should be observed in all their discussions—(*Cheers*). The respected chairman then called upon Mr. Leney, who had moved the adjournment, to continue the discussion on unfermented manures.

Mr. **Leney** said that he had moved the adjournment of the discussion, not because he could hope to throw any light upon the subject himself, but because he considered that as far as they had gone, sufficient *practical* information had not been furnished to guide them to a satisfactory conclusion. He was in hopes that some one of their members had tried farm-yard dung, one half applied fresh from the yard, and the other half mixened; and would have been able to tell them which mode of manuring had produced the best effects on a single crop, and also a succession of crops, and whether the use of fresh dung favoured the increase of insects? Without this knowledge he felt that they might have decided hastily; for although the use of fresh dung might be in perfect accordance with theory, he felt that it had not yet been sufficiently tried to justify its general adoption.

The **Chairman** said that before this information could be given, fermented and unfermented manures must have been tried in various seasons and on various soils.

Mr. **Barnes** recapitulated what he had advanced at the last meeting. We understood him to say, that his soil was a stiff clay or loam. He always used manure rough, and considered that it did more good than manure that had been mixened. On one occasion, he had an opportunity of trying an experiment with thirteen acres of seeds. A mixen of well rotted dung was carted out upon it, but was insufficient to cover the whole by about three acres. He had a quantity of rough dung fetched from the yard sufficient to cover the rest—but which, if rotted, would not be more than half the quantity used on the other per acre. After remaining six or eight weeks he raked up the long straw left on the ground, and carted it back to the yard. On that part of the seeds, *one fourth more was grown* than where the rotten dung was used. On another occasion, having top-dressed wheat with rotten and yard dung, he found he got at least one sack per acre more from the rough dung than from the rotten. He had seen a whole field top-dressed with rot dung, without any advantageous results—but he had known a great increase of produce by a top-dressing with rough. In the case of meadows, it should be carried out from the yard immediately after mowing—he had always found rough dung far exceeded rotten dung for grass. He had tried potatoes, and found that though rot dung did much good, rough dung did much more. Still further—he had used straw which had never been in the yard, and though it had not so much effect as rough dung, it increased the crops very considerably. He had tried it in a variety of shapes, and in every instance the rough dung had gone further and done more good than rotten. A great deal depended, certainly, upon whether the summer was wet or dry. The difference of soils ought always to be borne in mind—what would be advantageous to stiff soils, might be injurious to light.

Mr. **Whiting** said that it might perhaps always be deemed advisable, as the club had been formed for self instruction as much as recripocal instruction, that whenever the practical experience of the members present was inadequate to the explanation of any point under discussion—a reference should be made to the best authors. The experience of practical men was most desirable, but where practice was not combined with theory or founded upon a scientific basis, experience would frequently fall short in giving them the knowledge they required—and a recurrence should be had to the opinions of those scientific men whose works were confessedly entitled to every attention from practical men. Mr. Whiting then read several extracts from "British Husbandry," bearing on the subject of fermenting dung, and quoted the opinion of M. Von Thaër, that not only did theory so teach, but that during his (Von Thaër's) own experience he had had frequent occasion to observe, that it was hurtful to remove farm-yard manure while it is in a high degree of fermentation; for, according to all appearance, an essential portion of the most active substances of which it is composed are evaporated when exposed to the air while that process is going on. But before the fermentation has arrived at its height, or after it has passed, the dung does not seem to lose anything by exposure to the air; or at least, nothing but what it regains by some other means. After quoting the fact as stated by Sir Humphrey Davy, that Mr. Coke, of Norfolk, (Earl of Leicester), had entirely given up his system of unfermented dung, that his crops had been as good as ever, and his manure had nearly gone twice as far; Mr. Whiting read the following passages from Sir Humphrey Davy's Elements of Agricultural Chemistry :—

"Whoever will refer to the simplest principles of chemistry cannot entertain a doubt on the subject. As soon as dung begins to decompose, it throws off its volatile parts, which are the most valuable and most efficient. Dung which has fermented, so as to become a mere soft cohesive mass, has generally lost from one-third to one-half of its most useful constituent element; and that it may exert its full action upon the plant, and lose none of its nutritive powers, it should evidently be applied much sooner, and *long before decomposition has arrived at its ultimate results.*"

"A slight incipient fermentation is undoubtedly of use in the dunghill, for by means of it a disposition is brought on in the woody fibre to decay and dissolve when it is carried to the land, or ploughed into the soil, and woody fibre is always in great excess in the refuse of the farm. Too great a degree of fermentation is, however, very prejudicial to the composite manure in the dunghill; it is better that there should be no fermentation at all before the manure is used than that it should be carried too far; for the excess of fermentation tends to the destruction and dissipation of the most useful of its parts, and the ultimate results of this process are like those of combustion.

"Where farm-yard dung cannot be immediately applied, the destructive fermentation of it should be prevented as much as possible. For this end the dung should be kept dry and exposed to the air; for the moisture and contact with the oxygen of the atmosphere tends to excite fermentation. To protect a heap from rain, a covering of compact marl, or of a tenacious clay, should be spread over the surface and sides of it. Watering dung hills is sometimes recommended for checking fermentation, but this practice, although it may cool the dung for a short time, is inconsistent with just views, for moisture is a principal agent in all processes of decomposition; dry fibrous matter will never ferment. Water is as necessary as air to the process, and to apply it to fermenting dung, is to supply an agent which will hasten its decay. If a thermometer plunged into the dung does not rise above 100 of Farenheit, there is little danger of much aeriform matter flying off; if the temperature is higher, the dung should be immediately spread abroad.

"The same author, indeed, mentions an instance—cited in Dr. Thompson's System of Chemistry—of an experiment, from which it appears that the periods when putrescent manures begin to produce their effects, and the length of time during which they continue to operate, are proportioned to the degree of putrifaction under which they are applied. Two pieces of the same kind of soil were manured—the one with a mixture of dung and straw highly putrified, the other with the same proportions of dung and straw newly mixed, and the straw almost fresh. It was then observed that, during the first year, the plants which grew on the putrified dung produced a much better crop than the other; but the second year, the ground which had been manured with the fresh dung produced the best crop; the same result took place in the third year, after which both pieces seemed to be equally exhausted."

Messrs. White (Kennards), Elvy, and Spencer, stated that they were trying experiments with fermented and unfermented manures, and intended to communicate the result to the club. *(Hear, hear)*.

After some farther discussion the following resolution was passed, on the motion of Mr. Barnes, seconded by Mr. Barrow:—"That the club, in consequence of the different opinions which exist in reference to fermented or unfermented and liquid manures, feel it impossible to come to a decision on the subject, but intend to avail themselves of the proposal of several members who have undertaken to test their relative qualities, and will be prepared to give the benefit of their experience on some future occasion."

The next discussion will be on summer fallows, and the one following on the best means of cutting corn.

THE CORN LAWS.

It is somewhat remarkable that amongst the lords who entered their protest against the corn bill of 1815 appears the name of the Marquess of Buckingham, the father of the present Duke; with the Dukes of Sussex and Gloucester, the Marquess of Wellesley, Lord Granville, (the supposed framer of the Protest) and others. The chief grounds of that Protest were as follows:—

"1. Because we are adverse in principle to all new restraints on commerce. We think it certain that public prosperity is best promoted by leaving uncontrolled the free current of national industry; and we wish rather, by well-considered steps, to bring back *our commercial legislation to the straight and simple line of wisdom*, than to increase the deviation, by subjecting additional and extensive branches of the public interest to fresh systems of artificial and injurious restriction.

"2. Because we think that the great practical rule of leaving all commerce unfettered, applies more peculiarly, and on still stronger grounds of justice, as well as of policy, to the corn trade, than to any other. Irresistible, indeed, must be the necessity which could, in our judgment, authorise the Legislature *to tamper with the sustenance of the people, and to impede the free purchase and sale of that article on which depends the existence of so large a portion of the community.*

"3. Because we cannot persuade ourselves that this law will ever contribute to produce plenty, cheapness, or steadiness of price. So long as it operates at all, its effects must be the opposite of these. *Monopoly is the parent of scarcity, of dearness and of uncertainty.* To cut off any of the sources of supply can only tend to lessen its abundance—to close against ourselves the cheapest market for any commodity, must enhance the price at which we purchase it; and *to confine the consumer of corn to the produce of his own country is to refuse to ourselves the benefit of that provision which Providence itself has made of equalising to man the variations of season and of climate.*

"4. Because, whatever may be the future consequences of this law, at some distant and uncertain period, we see, with pain, that these hopes must be purchased at the expense of a great and present evil. *To compel the consumer to purchase corn dearer at home than it might be imported from abroad*, is the immediate practical effect of this law. In this way alone can it operate. Its present protection, its promised extension of agriculture, must result (if at all) from the profits which it creates by keeping up the price of corn to an artificial level. These future benefits are the consequences expected, but, as we confidently believe, erroneously expected, from giving a bounty to the grower of corn, by a tax levied on its consumer."

IMPROVEMENT IN WOOL.

TO THE EDITOR OF THE SUFFOLK CHRONICLE.

Sir,—I copy for your wool-growing readers a letter I have just received from a gentleman who has devoted some years of close attention and experiment to the rendering of that article more fit and available to the purposes of the dyer and manufacturer.

It is needless for me to expatiate on the great interest of the subject (especially to a county like Suffolk); I have only to bear willing testimony to the indefatigable perseverance and high respectability of my correspondent, Mr. Peirce. C. L.

"*Islington June* 5, 1841.

"Dear Sir,—I will now furnish you with the particulars of my discovery, and what I honestly believe to be the effects produced by it.

"The object I have in view is to discharge the tubular contents of each fibre of wool, and to liberate from animal gum the overlapping laminæ.

"The fibre thus becoming hollow, the internal as well as the external surface is made to receive the dye, which is not accomplished by the present mode of dyeing, consequently the colours are not liable to fade, and the use of the more expensive dye stuffs, it is presumed, will not be required.

"By this process the exterior of the fibre is more perfectly developed, and is better adapted to the manufacture of a close felt as well as the spinning of a finer thread.

"The wool is improved in fineness and softness full 20 per cent., and the loss of weight does not exceed 2½ per cent. I also beg to hand you a copy of Dr. Ure's opinion.

'*London, June* 4, 1841.

'I have examined, by means of a powerful achromatic microscope, woollen fibres cleared by the patent process of Mr. Peirce, and find their pores to be more open and their textures to be finer than the fibres of the same wool as found in the market.

'I am therefore of opinion that the process of Mr. Peirce will constitute a valuable means of improving the quality of wool and woollen stuffs.

'It will in particular enable wool to receive and retain dyes in a more uniform and permanent manner than it could do in its ordinary state.

Andrew Ure, M.D., F.R.S.'

"I remain, my dear Sir, your's truly,

"Wm. Peirce."

PRESENTATION OF PLATE TO R. W. BAKER, ESQ.

On Saturday, June 5, the interesting ceremony of presenting the plate raised by subscription to Mr. Baker, in token of his zeal and industry as an agriculturist, took place at his residence in Cottesmore. The gentlemen of the committee assembled at the Sun Inn, at one o'clock, and having made all preliminary arrangements, and balanced the accounts (which were most satisfactory, and highly creditable to the indefatigable secretary, Mr. J. Law, of Uppingham, who received the merited thanks of the committee), they proceeded in a body to Mr. Baker's house.

They were here met by that gentleman and his family, and, the magnificent service being displayed, it was presented by

Mr. S. Cheetham, of Hambleton, who spoke as follows:—Mr. Baker, I know not to what circumstance I am indebted for the honour of being selected to present you with this tribute of our respect, but I beg to assure you, that I address you on this occasion with feelings of the highest satisfaction. And, sir, in discharging the duty which the kindness of my friends has imposed upon me, I shall with your permission, advert as briefly as possible to those features in your public life in connexion with rural affairs, which have marked you as the farmer's friend, and which have suggested, and finally led to the accomplishment of our wishes. To enlarge upon the importance of agriculture in this place would, I feel, be a work of supererogation, as it is too well known to be of the first importance to almost all classes, from the monarch upon the throne to the peasant in his cottage, to need comment here; but I conceive that farm labourers are, of all other classes, the most deeply interested in the welfare of agriculture, and I rejoice exceedingly that that very useful class of persons has had an opportunity of testifying their respect to you, sir, for the benefits conferred upon them under the allotment system; and here, sir, I might dilate at some length upon the great services you have rendered mankind in this branch of rural economy, but I shall content myself with having merely alluded to it, as I am anxious to notice in passing other, and perhaps more important branches. That you, sir, are a patron of rural pursuits in general, is abundantly shown by the improved condition of the land over which your influence has been, and still continues to be, judiciously exercised; and whilst you have given every encouragement, to agriculture both by precept and example, and by those means which your attainments and station have placed within your reach, you have ever been ready to devote the energies of your comprehensive mind to the support of those laws under which agriculture may be said to have prospered; for whilst they have secured to the farmer, upon an average of years, something like remunerating prices for his produce, (I trust without pressing with undue severity upon any other class of the community) they have conferred great advantages upon a vast majority of her Majesty's subjects. Nor ought I, whilst enumerating a few of those deeds which will shed upon you an imperishable fame, to omit to mention the benefits which have arisen to society by your judicious breeding, rearing, and general treatment of cattle—benefits which though silently are still as surely making their way into every division within your sphere of action. This, sir, is strikingly illustrated by the success which has attended your efforts at many of the exhibitions of agricultural societies. In hastening to the more immediate business of this meeting, I am led to advert, although very briefly, to the masterly and beneficial manner in which you, sir, have conducted the competition for prizes amongst farm labourers in the various departments of ploughing, hedge-cutting, ditching, stacking, and thatching; and last, though not least, draining. Appreciating then, as they have done, the merits of your well-directed endeavours on their behalf, it was most natural that your friends, and the cultivators of the soil generally, should determine upon making a public demonstration illustrative of their approval of your conduct as an agriculturist. And I assure you, sir, in all sincerity of heart, that it is with feelings of pride and pleasure that I have, in the name and on behalf of this committee, myself, and more than one thousand subscribers, including the Emperor of Russia, many of the nobility, large landed proprietors, clergy, gentry, and land-owners and occupiers of every grade, and in every part of the united kingdom, tradesmen and others connected and unconnected with the soil, to beg your acceptance of this service of plate, in testimony of your inestimable and unremitting exertions in the cause of agriculture. And I rejoice, sir, in common with all other of your friends, that you are still in the vigour of manhood, and may you, sir, live many, many years to enjoy it—to confer blessings upon your family, happiness upon your friends, and benefits upon all around you.

Mr. Baker replied—Gentlemen, I thank you cordially for the very flattering and kind address with which you have honoured me, and for the lively interest which you have, as a committee, individually and collectively evinced in carrying out the wishes of a very numerous and influential body, who have generously joined together with you in expressing their approbation of my conduct as an agriculturist. This testimonial with which you now present me is *magnificent*. Honours like these fall to the lot of but few men, and, in offering my humble but warm and sincere thanks for this distinguished compliment, it is no small satisfaction to find that, in exercising a duty in advocating and promoting the improvement of agriculture, and protection to British husbandry, I have met with such marked and general approbation. To the labourers and artizans I offer my especial thanks, as well as to the tradesmen who have spontaneously and liberally joined with my brother agriculturists in this valuable gift, and to the gentry, clergy, and nobility who have in the present offering thus honoured me; but to find words expressive of my feelings is quite impossible. Gentlemen, I accept this superb gift with a grateful heart, earnestly desiring a continuation of every friendly feeling that has been for so many years anxiously cultivated on my part, and now so nobly recognised into maturity, and that you will find me ever ready to join with you in works of duty to our fellow men, and for the general prosperity of our country. This, your valuable gift, shall be handed down to my children's children, in commemoration of your great kindness, and my own gratitude.

The service of plate, which was valued, we believe, at 380*l.*, consisted of an elegant candelabrum, to form also an epergne, with seven branches, a soup tureen, cover, ladle, &c., a venison dish, and four corner dishes, to make eight; the whole solid silver, of very fine quality and superior workmanship; on the pedestal of the former piece the following inscription was engraved:—"To Richard Westbrook Baker, Esq., this Testimonial of his invaluable services in the cause of Agriculture, and for advocating Protection to British husbandry generally, presented June, 1841, from upwards of One Thousand of the Nobility, Clergy, Gentry, Agriculturists, Tradesmen, Artisans, and Labourers, of Rutland and other counties."

The committee afterwards partook of a splendid collation, and the afternoon was passed with the utmost harmony.

PORTRAITS OF PRIZE ANIMALS.—The portraits of Earl Spencer's ox, which obtained the gold medal at the late Smithfield Show, and of Mr. Crisp's Southdown ram, which obtained a prize at the meeting of the Royal Agricultural Society at Cambridge, executed by Mr. W. H. Davies, of Chelsea, and of which he presented copies to the Royal Agricultural Society, have met with unqualified approbation, as being some of the best portraits hitherto taken by Mr. Davis, and will add much to the already well known talent of that gentleman as an animal painter.

REMARKS

ON THE EVIDENCE PUBLISHED BY THE LATE COMMITTEE ON BANKS OF ISSUE, ADDRESSED TO THE MANCHESTER CHAMBER OF COMMERCE.

Our attention has been called to a series of letters by a retired merchant, printed for gratuitous distribution, the object of which is to draw the attention of the present banking committee to the investigation of original principles, rather than to waste their time in listening to the contradictory opinions of ex-parte witnesses, which must tend to puzzle and perplex, more than enlighten the committee.

We think we cannot better serve the public, than by giving them insertion, and recommending them to the perusal of our readers. It is manifest, that, without having some fixed principles to refer to, there is no saying what opinion is right or what is wrong; nor is it possible to discuss any question without some accurate definitions of the terms employed. In both these respects, much advantage may be derived from the attentive study of these letters.

Letter I.

1. The first thing that strikes the reader of the report published by the committee, is the entire inaccuracy of the terms used in the examination, and the different meanings attached to them by almost every different witness.*

2. The next thing which appears most observable, is the total absence of all reference to any original principles or acknowledged axioms, by which to try the correctness of the opinions or theories advanced. Without some such guide one opinion may claim the same weight as another, and, in the end, they all must resolve themselves into assertion against assertion, leaving the committee more perplexed than enlightened, and wholly without any steady light to direct its determination.

3. To overcome these difficulties, it appears indispensable, in the first place, clearly to define the meaning of the terms employed, and the limits to which they are respectively confined; and, in the second place, to try whether some fundamental principles or axioms might not be laid down, the correctness of which being acknowledged on all sides, might afford the test alluded to as being so necessary to establishing what should be considered right and what wrong in the opinions and recommendations of those examined.

4. A correct definition of *capital* and *currency* would appear to me likely to throw light upon the equivocal terms in question, and I therefore commence by defining capital to be "that which enables the possessor to command the labour or the produce of the labour of others." Whatever possesses this power is capital, *no matter how it may be invested*—whether lodged in the bank under the name of a deposit, or invested in the funds, exchequer bills, bills of exchange, bank notes, specie, or fixed property; or, in short, in any way whatever. Whilst it continues so invested it still continues capital, because it still continues possessed of the power which constitutes it such, according to the definition just given.

5. Under this definition, also, it appears that a bank credit of any kind, whether by deposit or otherwise, is capital, because it commands labour, or the produce of labour, just as much as investments in the funds, or in exchequer bills, bills of exchange, &c., &c., or even specie itself.

6. In regard to currency, I would define it to be "that which was currently received as a measure of value, or used as a medium of exchange, whether so constituted by legal enactment, general convention, or particular agreement." Thus, specie or Bank of England notes are currency, being a legal tender by *enactment*, whilst other bank notes, convertible into specie, or Bank of England notes, are currency by *general convention*, and bank cheques, bills of exchange, &c., &c., are currency whenever they become a medium of exchange by *particular agreement*, being, when so used, a substitute for bank notes, in like manner as bank notes are a substitute for specie, the time of becoming payable being no impediment to their efficiency as a medium of exchange, and of no importance except to the parties immediately concerned.

7. If these definitions be correct, then it appears evident that one and the same thing may be changed from *capital* into *currency*, according to circumstances; for example—we see by No. 4, that *capital* may be invested in a *deposit*, but may become *currency* according to No. 6, by being drawn out by cheques; and the same may be said of exchequer bills, or bills of exchange, being, in fact, only another name for bank notes or specie, with the difference of being payable at a certain specified period.

8. But it is true, according to the foregoing, that what is *capital* may become *currency by being used as a medium of exchange*. It is equally true, that *currency* may also become *capital* when *it is not so used*, because it will still possess that which constitutes capital, viz., the power of commanding the labour or the produce of the labour of others. Thus, any person having more specie or bank notes than he has occasion to use, this surplus becomes equally a *deposit* of capital, whether it is retained in his own custody or placed in the custody of a banker, agreeing equally with the definition of capital in either case.

9. The truth of this may be rendered more intelligible in the case of bullion. It is capital so long as it continues so invested, but it becomes *currency* the moment it is changed into *coin*; and it becomes capital again until required for use, whether it is placed in the bank or the strong box, just as much as if it were again melted into *bullion*.

10. If this view of the matter be taken as correct, then the inaccuracy of calling deposits currency *because they are liabilities*, or calling them circulation *whilst they are not circulating*, becomes fully apparent, as also the folly of taking up the time of the committee by pressing the demand of a positive answer to a question which manifestly would not admit of one, it being quite clear that no witness could estimate how far the numerous proprietors of deposits would continue them as capital or use them as currency, or *vice versa*, the calculation being absolutely impossible for any person to make; and thus one half of the time of the committee occupied in these discussions might have been saved.

11. Enough probably has been said to show the sweeping effect of correct definitions; and, if

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* See the evidence of Messrs. Smyth, Cobden, Page, Wood, and others, as to currency, liabilities, deposits, circulation, &c.

those I have advanced are not correct, I hope some one better qualified will supply others free from objection ; but it is not merely in these respects alone that correct definitions would be found useful; if they are correct, they would lead to many other important deductions ; for if bills of exchange, promissory notes, &c., form a *part* of the currency, then its *total* amount will be swelled to an enormous extent. From statistical calculations it would appear that the amount of bill currency always afloat, upon the average, in the year, is little short of 150 millions sterling ; and if this be added to the immense amount of transfers carried on through Bankers' cheques, as will appear from the transactions daily settled in the London clearing-houses, the total amount of currency of every kind employed in the transfer of commodities, and the settlement of all kinds of mercantile transactions, will amount to such an enormous sum that any little contraction or extension of that small portion consisting of bank notes becomes quite inadequate to the great effects attributed to it, and leads to the supposition that there must be some other way in which these contractions and expansions operate, entirely distinct from that to which their small numerical proportion would appear to justly entitle them. It seems to me that this supposition is well founded, and it shall be my endeavour, before concluding these observations, to enter particularly into the examination of *modus operandi;* but it appears desirable, in the first instance, to see whether a reference to first principles will throw as much light upon the correctness of the opinions given to the committee as the definitions above stated appear to have done upon the terms in which those opinions have been expressed.

12. I think I have shown very clearly how necessary it is to have correct definitions, in order to assign accurate meanings to *the terms* used by the witnesses brought before the committee. I now proceed to show the necessity of having recourse to some original principles, which may serve as tests to try the correctness of *the opinions* they have advanced.

I have in vain sought for anything of this kind in the report of the evidence, and am therefore induced to quote from a small pamphlet, entitled, "The Evils inseparable from a Mixed Currency." I find there, in the 2nd and 3rd paragraphs, a principle laid down, in which I entirely concur, and which will be found to have a most important bearing in many respects upon the evidence as published.

The paragraphs alluded to are these :—Paragraph 2. "Going back to the remote period when gold and silver formed the only circulating medium, it will be admitted that the market price, or the quantity of the precious metals equivalent to any particular commodity, must depend on the comparative abundance or scarcity of the article to be exchanged, and also the abundance or scarcity of the precious metals to be given for it ; and that supposing either of these data to remain unchanged, then the market price must be regulated according to the variation of the other. Thus, for example—although the supply of commodities in general, or of any commodity in particular, may remain exactly the same, yet, if the quantity of the precious metals is diminished, or in other words, if money becomes scarce, the market price immediately falls, and less money would be given in exchange for the same article than formerly ; and, *vice versa*, if the quantity of the precious metals should be increased, or in other words, if money should become more plentiful, then the market price rises, and more money would have to be given for the article wanted.

3rdly. On the other hand, supposing *the quantity of money to remain unaltered*, but a great increase to take place in any commodity (as, for instance, in grain after an abundant harvest), then the market price falls in consequence of that abundance, and *vice versa* after a bad harvest. When it becomes less plentiful, the price rises, and more money is given for it ; so that, in order to secure any *permanent* scale of prices, it is absolutely necessary that the *proportion existing between the commodities to be sold, and the quantity of money to buy them with should be maintained permanent also.*"

13. If the principle laid down in the foregoing quotations is correct—which I rather think will not be disputed—it will show that Mr. Smyth's list of articles, from the change in the price of which he relies for the support of his charge against the directors of the Bank of England, is not a conclusive proof in his favour, because he argues upon only one element in forming the market price, the other not being taken into account, the same fall being possible from other causes. But a simultaneous fall in so many articles certainly affords so very strong probability in favour of his assertion that few people will be inclined to doubt its correctness.

14. But the principle alluded to would absolutely condemn Messrs. Lloyd and Norman and Co. in their opinion of the absolute perfection of a metallic currency, because it is admitted by all that a drain for specie may take place from peculiar causes, without any reference to the state of trade or manufactures whatever; as, for instance, by reason of a foreign loan, and the proportion between the said metallic currency, as compared with commodities being thus changed, it can no longer remain an equable measure of value if *the principle contended for in the quotation is correct.* In like manner this principle, if correct, will set aside Mr. Muntz's proposition to have a reserve in specie equal to the issue of notes, in order that the variation might correspond with a specie currency, unless he could prove that this specie currency would fluctuate according to the increase or diminution of commodities, *his* plan is also open to this further objection, that specie might be withdrawn by cheque without any corresponding issue of bank notes at all.

15. It also follows, from the doctrine laid down, that the bank rule of 1832 is erroneous, because *if it is right* that the relative proportion of currency and commodities is to be maintained, it *must be wrong* to be guided by the Exchanges upon all occasions, when they may be, as above shewn, sometimes low when mercantile transactions are high, and *vice versa*, and therefore afford no certain index whatever of the amount of commodities.

16. But the inference which is by many degrees of the greatest importance as bearing upon the conduct of the Bank directors is this—

It will, I have no doubt, be readily admitted that the amount of currency held in circulation, or I may say absorbed by the public when there is no extraneous cause in operation, will depend upon the rate of interest, and the length of discount—low interest and discount of long paper have a natural tendency to increase the amount in circulation, and high interest and a short term of discount makes money more scarce, and leaves less in circulation. This being the case, and let any given rate and term of discount at any period be taken as a starting point, if the directors, by any interference of theirs with the existing state of things, destroy the proportion between the currency and commodities then established, the said interference directly destroys the correctness of the currency as an equable measure of value compared with that scale.

If this reasoning is correct, then it most undeniably condemns the Bank directors when they arbitrarily alter either the *rate* or the *term* of discount, whether it be to increase or lessen the amount of the currency,—for the *latter*, indeed, they may occasionally plead the necessity of the case (which, however, may have been the consequence of their own previous misconduct); but for the *former* there can be no excuse whatever,—it is plainly and clearly tampering with the currency for the benefit of the Bank, and the existence of the practice is proved to demonstration by their own returns, appendix, No. 14, page 104 of the report, where it appears the rate of discount had fluctuated from 3 to 6 to per cent., and the sum the Bank directors had advanced, amounted to 17 millions, equal to their entire Bank note circulation.

17. It is unnecessary to multiply examples; the foregoing must be decisive of the advantages of having fixed principles to refer to—it brings, in all cases, the matter to a point, and the question is put into a tangible shape. Had Mr. Smyth, on the part of the Manchester Chamber of Commerce, attended to these principles, he would have brought his charge against the directors for having destroyed the currency as an equable measure of value, by altering its proportion to the exchangeable transactions going on under its instrumentality, and thereby deranging prices, taking the currency upon the great scale, as including bills, notes, cheques, &c., and everything used as a medium of exchange. In such case he must have succeeded; but by confining himself to the narrow limits of *his* view of the currency, he was defeated by a reference to the official documents. Although, however, Mr. Smyth may have been confuted *in argument*, it does not therefore follow that his charge was unfounded. In fact, he was confuted by his erroneous definition of the currency, mistaking a *part* for the *whole*, from which he could not afterwards depart; but, notwithstanding the confutation thus given, with regard to that part of the currency which he took for his test, yet a reference to the returns in appendix, No. 14, will show that at the time stated the Bank directors were forcing out currency upon the country which the country did not require or call for; and this is proved by the undeniable fact stated in their own returns, that they lowered the *rate* and prolonged the *term* of discount in order to get their notes taken from them—see appendix, No. 19, showing the offers made by the directors. That the country did not want this issue is quite clear, because they would not apply for it at the existing rate of interest and term for discount; for if the country would have taken the notes so issued, according to the existing rates, the directors would have had no occasion to lower them. No one will accuse them of having the folly to advertise their willingness to take 3½ per cent. upon the security of long bills, if they could have got their notes issued at 4 per cent. for short ones. This conduct, therefore, is a direct tampering with the currency, as unjustifiable as undeniable, the consequences of which extended far, very far beyond what might at first sight appear to be at all corresponding to the amount so issued.

I have already alluded to the small numerical proportion which the variation of a few millions in the bank note issues, bore to the enormous amount of the currency, swelled as that amount was by including therein bills of exchange, cheques, &c., and everything else made use of as a medium of exchange, and the apparent impossibility of such a variation being attended with the important consequences attributed to it, which I shall attempt to elucidate in my next, confining myself at present to the object I commenced with—namely, the application of original principles, as a test to try the correctness of the opinions advanced by the different witnesses before the committee. In doing this, I have limited my observations to but a very few cases, my wish being merely to shew the advantage of changing the mode of dealing with the question, and directing public attention to the establishment of sound principles, rather than speculative opinions; whether I am correct in adopting the principles laid down by Mr. Blacker, in the pamphlet alluded to, is open to investigation, but I think it is clear that it is only by the test of original principles truth can be established. For this object I have only had occasion to allude to one out of several principles contended for by Mr. Blacker, which appears to me sufficient for my purpose, but he introduces another which I think not less worthy of public attention—and which I may perhaps hereafter discuss—namely, whether, let the currency be what it may, the issuing body *can issue* to excess, if confined solely to the discount of commercial paper having a given length of time to run, and at a fixed rate of interest all other issues, in loans to government or individuals, or in dealings in public securities being prohibited. I think I should not be doing my duty to the public if I did not draw public attention to this principle, as well as that to which I have more particularly alluded to in the foregoing, being entirely convinced that the clear establishment of the correctness of these two propositions would do more to elucidate the nature and management of all currencies, be they what they may, than has resulted from all the committees and all the enquiries that have taken place up to the present day.

A Retired Merchant.

A COMPROMISE.

"Sir,—I wish to suggest a *compromise* between a sliding scale' and a fixed duty, as thus:—

"Whenever the average price of wheat shall be at or above 45s. the quarter, and not above 55s., the duty shall be 8s.

"For every shilling by which such price shall be under 45s., such duty shall be increased by 6d.

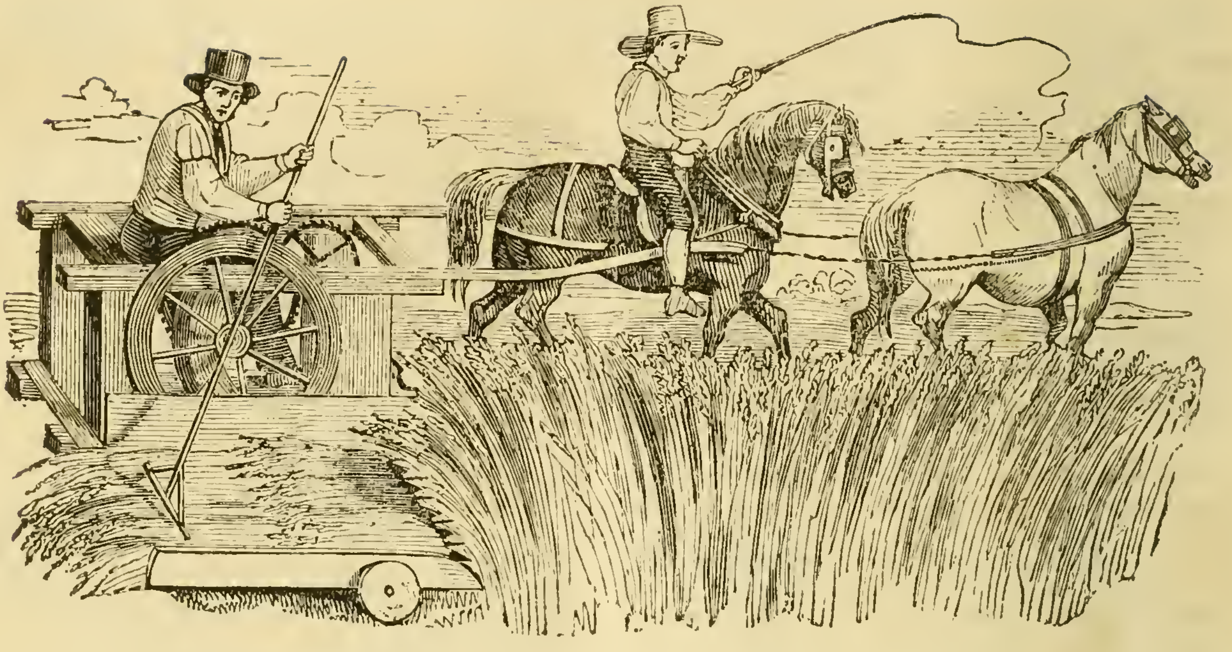
"For every shilling by which such price shall be above 55s., such duty shall be reduced by 6d., until such price shall be above 65s.

"Whenever such price shall be above 65s., such duty shall be 2s. 6d.

"The intention is to avoid extremes both ways, and yet not lose sight of revenue; also to avoid fluctuations in ordinary seasons.

"Your humble servant,

"*June* 7, 1841. "H. B. T."



HUSSEY'S REAPING MACHINE.

(FROM THE CULTIVATOR.)

Messrs. Gaylord and Tucker,—At the request of several farmers of your state, I send a description of my reaping machine and its mode of operation, accompanied with such certificates as I can procure near at hand. The machine consists of a low frame resting on a pair of common wheels, with fills for one horse; the second horse is geared tandem. The main axle is square in the hubs of the wheels; on this axle is a cog wheel which communicates motion to the cutters. The part thus far described follows directly behind the horses, and wholly on the stubble; the right wheel tracking very near the standing grain. A platform about five feet square extends from the right side of the frame, one edge of which is attached to the frame by hinges: the opposite edge rests on a truck wheel. This platform lies near the ground, and can be regulated to cut a stubble from five to twelve inches high.

The cutting apparatus is placed on the front edge of the platform, and is constructed as follows:—A number of steel blades, four or five inches long, about three inches wide at the base, formed like lancet points, sharp on both edges, are rivetted on an iron rod side by side, forming an instrument something like a coarse saw. In addition to this, there is a row of strong iron spikes fixed firmly to the edge of the platform, and pointing forward horizontally; each spike is formed of an upper and a lower piece, leaving a space through each spike for the blades to play in. As each blade occupies three inches on the rod, so there must be a spike to every three inches of the platform. The rod on which the blades are rivetted is moved by a crank having a sweep of three inches, causing all the blades to move at once; each blade vibrating between two spikes, passing out of one spike into the other, cutting the grain as it comes in between the spikes as the machine progresses; each double spike forming a bearing to resist the straw both below and above the edge of the blades. The crank which moves the blades is connected with the cog wheel on the main axle, which must necessarily cause the vibration of the blades to be in proportion to the speed of the horses, whether that be a walk or trot.

The motion of the machine forward causes the heads of the grain to fall backwards on to the platform as it is cut; in this manner it accumulates on the platform in a heap, leaving the stubble clean. The raker is seated on the main body of the machine with a rake of peculiar construction, with which he pushes off the grain in separate heaps for binding. I cannot better describe the manner of using the rake than to say it is like paddling a boat, except instead of putting the paddle into the water, he puts the rake into the grain which has accumulated on the platform, and slides it off in a body behind. It may appear on first consideration, that the bundles could not be distinctly separated while the grain is constantly falling; experience proves that there is no difficulty in this whatever, for the grain under the rake will readily pass from the machine, without dragging with it any part of the next bundle. But the operation is still more complete when the rake, instead of being put down on the prostrate grain, is put down a few inches in advance of the cutters into the heads of the grain not yet cut; by this means the bundle is swept clean off before other grain falls on the rake. The rake is used in this manner to great advantage in lodged and tangled grain, also when the wind blows strong from behind, by way of assisting the grain on to the platform. Besides the raker, a boy is required to drive, who rides on the shaft horse. As heavy grain is cut as fast as light, the number of bundles will depend on the quantity of grain to the acre, and the speed of driving, say from four to ten binders, as the case may be.

By several years experience, I have been enabled to add much to the durability of the machine, which I apprehend can now receive but little improvement further than I shall make this year. I manufacture machines in Baltimore, and my brother, Thomas R. Hussey, will manufacture them in Auburn, N. Y., this year. The machine is warranted to cut fifteen acres of the heaviest wheat in a day, and save it much cleaner than is usually done by a good cradler, and to cut the whole season without sharpening. The price at the manufactory is 150 dollars. The following certificates are from gentlemen of the highest respectability.

Baltimore, April 10, 1841. OBED HUSSEY.

CERTIFICATES.

Last year I purchased a reaping machine of Mr. O. Hussey, and it answered my expectation fully; it is very expeditious, and saves the grain better than in any other way with which I am acquainted.

Baltimore, April 9, 1841. H. SCHWARTZE.

This may certify that I have used a reaping machine which I purchased of Mr. Hussey, in Baltimore. I cut my crop with it last harvest, to my entire satisfaction, and without the slightest accident or interruption. It cuts clean and rapidly, and leaves the grain in perfect order for binding, and is in every respect equal to the recommendation given it by Mr. Hussey, in the "American Farmer" and other papers. As I found a decided advantage in the use of it myself, I can with confidence recommend it to others; I have not the least doubt that before many years the cultivators of wheat will find they cannot well do without it.

WILLIAM TRIPP.

Easton, Talbot Co., Md., April 6, 1841.

Having been applied to by Mr. Hussey for my opinion of his reaping machine, I can freely say that it is impossible for me to entertain a higher opinion of any machine than I do of the one which I purchased of him last year. It greatly exceeded my expectations in every respect. Such was the condition of my crop, that I should have sustained material loss without the machine. I cut my heavy lodged wheat with it entirely clean; I could at any time cut as fast as seven men could bind while doing their best. I feel no hesitation in recommending it to every cultivator of wheat, as a great grain-saving as well as labour-saving machine.

WILLIAM JESSOP.

Cockeysville, Baltimore Co., Md., April 7, 1841.

Those wishing machines for the coming harvest, should send in their orders as early as possible.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Council held on Wednesday, the 26th of May, present—Philip Pusey, Esq., M.P., President, in the Chair; Marquis of Downshire, Earl of Aylesford, Hon. Robert H. Clive, M.P., Sir Francis Lawley, Bart., David Barclay, Esq., Thomas Raymond Barker, Esq., Edward Buller, Esq., M.P., Humphrey Gibbs, Esq., William Goodenough Hayter, Esq., M.P., C. Hillyard, Esq., George Kimberley, Esq., William Woods Page, Esq., Edward Ayshford Sanford, Esq., M.P., Robert A. Slaney, Esq., M.P., R. C. Compton Stansfield, Esq., M.P., and George Wilbraham, Esq., M.P.

ALLOTMENT WHEAT.

Mr. Raymond Barker presented to the Society a fine specimen of Wheat, grown on a 40 pole allotment piece of arable land in the parish of Hambleden, in Buckinghamshire, having 80 straws, and upwards of 50 ears, which ripened, and were on the root when it was pulled.

AGRICULTURAL BEER.

Mr. W. M. Grover, of Boveney, near Windsor, transmitted to the Council a Paper on the brewing of a cheap and nutritious beverage for agricultural labourers, and this communication was referred to the consideration of the Journal Committee.

EXPERIMENTAL AGRICULTURE.

The President laid before the Council a second Communication from Dr. Daubeny, of Oxford, in reference to the experiments to be tried on a small scale on manures and the growth of plants, proposing two distinct plans of arrangement, and requesting the Council to decide which of these they considered as possessing the greatest advantages in effecting the purpose under consideration: and the Marquis of Downshire, and Mr. Woods Page having consented to be added to the list, Dr. Daubeny's communication was referred to the former Committee on this inquiry.

Mr. Athorpe, of Dinnington Hall, Notts., informed the Council that another of his sheep having died of the disorder he had formerly reported to the Society, he had followed Professor Sewell's recommendation in procuring the earliest attendance of Mr. Justice, the Veterinary Surgeon, to make a post mortem examination of the animal; and that this gentleman (who was completely at a loss to account for the disorder) had sent the report of his anatomical investigation to Professor Sewell. Mr. Athorpe expressed his intention of sending the body of the next sheep to the Veterinary College, and in the mean time stated the general post mortem appearances of the brain, stomach, and intestines to be healthy, with no unnatural indications about the liver, lungs, or heart; the coats of the stomach, however, appeared to be inflamed, with great fulness in the blood-vessels about the stomach and chest, and considerable inflammation about the flesh of the chest and interior of the ribs. Mr. Justice recommended linseed-cake to be given to the hogs of the flock.

Mr. Compton Stansfield, M.P., communicated the report of his agent, Mr. White, residing at Esholt Hall, near Leeds, dated the 25th and 26th of May, informing Mr. Stansfield that the epidemic had broken out among his Scots; a circumstance he was unable to account for, as no fresh beasts had been introduced into the pasture, nor had the diseased sheep from York had any communication with them. Two or three of the beasts which had previously had the distemper having been turned in among the others, the next day no less than eight new cases occurred. Mr. White considered the disorder to be milder than last year, with the exception of the beasts first taken, and the others having a dose of medicine, and being kept for a night, appeared nearly well again; and stated, that although some of them were lame in the feet, the disorder appeared chiefly to affect the animals in the mouth and eyes; in those that were first taken, the skin coming completely away from the roof of the mouth. The remedies administered, and which answered very well, were half a pound of Epsom salt, an ounce and a half of saltpetre, an ounce and a half of alum, and from two to three ounces of linseed oil. The mouth being washed with alum and linseed oil, Mr. White concurred, with all who have had experience in this disorder, in considering the *earliness* with which the remedies were administered to have a great effect on the speediness of the recovery; adding that, in his own case, he had found those animals recover the soonest to which the *linseed oil* had been given, the mixture also of the alum and oil breaking and healing the ulcers very soon. Mr. White concluded by remarking that the animals had lost but little in condition, and that the disorder on the Esholt estate would occasion a loss not much greater than the cost of the medicines exhibited.

Mr. John Wiggins informed the Society that the epidemic had broken out, and was then raging among the cattle in the county of Kerry: and requested a supply of the Society's Circulars of Treatment.

The Hon. Mr. Clive stated that he was sorry to inform the Council that in Shropshire the epidemic had again made its appearance.

Farm Buildings.

Mr. Townshend Mainwaring, of Marchiviel Hall, near Wrexham, North Wales, invited the inspection of the Council to the entirely new plan upon which he had erected his new Farm Buildings. Having a Cheese Dairy, and requiring Tyings for about 30 cows, he raised the building so high as to admit unthrashed Corn under the same roof, by which arrangement he procured Corn Bays capable of holding the produce of about 20 acres. A communication was made between these Bays and the Barn, by means of a tram-way, so that a man or woman could easily push along a small waggon, which supplies the thrashers. The thrashing machine was worked by a steam-engine, which was made useful in grinding, cutting chaff, steaming, churning, pumping, &c. Mr. Mainwaring further stated that he was at present engaged in erecting a Water-mill, which in addition to the common purpose of grinding, was intended to force water sufficient to irrigate about 20 acres, the stream passing through two cess-pools near the cow-houses, and the field having been just laid down with grasses for the purpose of soiling.

Mr. Slaney, M.P., at the request of the Council, undertook to pay a visit of inspection during the summer to Mr. Mainwaring's farm establishment, and report to the Council on the merits of the new arrangements he had effected.

Protection of the Hop-Plant from Insects.

Mr. John Hobbs, of St. Ives, Cornwall, transmitted an account of the mode he had successfully practised in effecting the destruction of all the small insect tribes that infest the hop plant, by the erection of rails of a particular construction, smeared over with coal-tar, or the saturation of the poles with a solution of copperas.

Improvement of Wool.

Mrs. Coote, of Richmond Hill, near Clifton, communicated her management and preparation for Sheep in regard to the improvement of their wool, and their prevention from the annoyance of flies after shearing, by the application of a decoction of tobacco applied to the head and back of the animal after being shorn, and the addition (for the curing of scab, or removal of scurf on the skin) of flower of brimstone stirred into it. Mrs. Coote also recommended salt to be sprinkled broadcast on grass-pastures for improving the herbage, and preventing the foot-rot in Sheep.

New Thrashing Machine.

Mr. Athorpe, of Dinnington Hall, near Worksop, also communicated to the Council the notice of a new Thrashing-Machine which a neighbour of his had just invented, and which appeared to Mr. Athorpe to possesss considerable merit. The machine is exceedingly simple in its construction, and does its work well; but its great advantage is, that it delivers the straw quite as entire, straight, and fit for thatch, as any thrashed with a flail. Mr. Athorpe stated that he had that day seen the machine at work, and the grain (which was oats) was very clean thrashed, and not at all bruised, and very nearly all the straw came from the machine straight and fit to tie up for thatch; and it also appeared to him that it would probably be worked with less power than a common machine, but as horse power had not been applied, he would merely state that point of its merits as a conjecture. Mr. Athorpe added, that the ingenious inventor was a poor but worthy mechanic, and intended to exhibit his machine at the Liverpool Meeting.

Mr. Childers has given notice of moving for a new Bye-law, rendering such members of Council as have not attended the meetings six times during the year ineligible for re-election at the Anniversary Meetings; and the Rev. J. R. Smythies has proposed that a premium shall be given for Spring Wheat not sown earlier than the month of March, but its merits to be enhanced by its later sowing.

Mr. Barton, Secretary of the Watton Farmer's Club, presented the last printed Report of the proceedings of that institution, containing the discussion of a great number of interesting topics; and Mr. Gotelee, a copy of the last report of the South-West Middlesex Agricultural Society.

At a Council held on Wednesday, the 2nd of June, present—Thomas Raymond Barker, Esq. in the chair; Earl of Euston; Earl of Lovelace; Lord Bridport; Colonel Austen; Thomas William Bramston, Esq., M.P.; Colonel Challoner; John Walbanke Childers, Esq., M.P.; James Dean, Esq.; Robert Maule Gillies, Esq.; Samuel Jonas, Esq.; John Kinder, Esq.; George Kimberley, Esq.; Sir John Mordaunt, Bart., M.P.; Francis Pym, Esq.; William Shaw, Esq.; and W. B. Wingate, Esq.—

Sir Matthew White Ridley, Bart., of Blagdon, Northumberland, and Carlton House Terrace, London, was elected a Governor.

Colonel Challoner presented the Report of the Finance Committee, which was read and confirmed.

The Report of the Experimental Committee was read, and postponed until after the Liverpool Meeting.

A letter was read from Professor Lindley, expressing his interest in the proceedings of the Society, and his desire to promote its objects.

Mr. Parker, of Sweeney Hall, Shropshire, informed the Society that the Epidemic was raging in Cheshire, and in the direction of Montgomeryshire, and that he had, that day on which he was writing, been informed of the immediate death of a calf, ensuing on its sucking a diseased cow; a result which he considered would have been prevented by the milk having been previously boiled and skimmed.

Sir Charles Gordon, Bart., presented a copy of the Premiums of the Highland and Agricultural Society of Scotland for 1841; Mr. Shaw, the Farmer's Magazine; Mr. Youatt, the Veterinarian; and Dr. Spry, the Proceedings of the Agricultural and Horticultural Society of England.

At a Council held on Wednesday, the 9th of June, present—Philip Pusey, Esq., M.P., President, in the chair, Earl of Lovelace, Sir John V. B. Johnstone, Bart., Henry Handley, Esq., M.P., Thomas Raymond Barker, Esq., Edward Buller, Esq., M.P., French Burke, Esq., John Walbanke Childers, Esq., M.P., Edward Davies Davenport, Esq., James Dean, Esq., Humphrey Gibbs, Esq., J. Lennox W. Naper, Esq., William Woods Page, Esq., Richard Parkinson, Esq., and William Shaw, Esq.

Liverpool Meeting.

The Report of the Liverpool Committee, conveying the recommendation of the thanks of the Society to the Committee of the Liverpool New Cattle Market, for their offer, through Mr. James Wilson and Mr. Earle, of their Cattle Market as a Show-yard free of expence to the Society, instead of Falkner's Fields (which, however, the Society continued to regard as the most eligible site), and informing the Council of their unanimous election of Thomas Raymond Barker, Esq., as their Chairman, in consequence of the unavoidable absence from town of Mr. Sanford, M.P., the former Chairman of the Liverpool Committee—having been read and confirmed, Mr. Barker reported to the Council the result of his proceedings at Liverpool, and his final arrangements with Messrs. Holme, the contractors for the Dining Hall and Cattle Yard, and the active preparations satisfactorily made for the immediate progress of the works; and the Council unanimously confirmed the engagements contracted on this occasion by the Chairman, in reference to the arrangements for the Meeting.

Chidham Wheat.

H. Hollist, Esq., of Lodsworth, Sussex, presented to the Council a specimen of heavy, clean, and pure Chidham wheat, as a thoroughly good sample for the market, the seed having been drilled on a light loamy soil, on the 20th of November, and the grain weighing 67lbs. per bushel; and expressed his willingness to supply small quantities to any of the members who were desirous of cultivating this variety of wheat. Mr. Hollist stated, in reference to the history of the Chidham wheat, that it was probably known in other parts of the country by different names, but that in Sussex it was generally called the "Hedge-wheat," from the circumstance of an ear of it having been found, 20 years ago, on a hedge by Mr. Poslethwaite, of Chidham, and excited his curiosity and interest in its cultivation. The specimen sent by Mr. Hollist was heavier than the prize wheat at Cambridge, but not so bright in its appearance, a difference he attributed to the state of the weather during its growth. Mr. Hollist having also found in his own experience, the most decided differences in the result of trials on the growth of wheat arise from the slightest differences of soil, and time of sowing, with the same grain and in the same field.

Newcastle Agricultural Society.

Mr. Thomas Walton Mayer, presented a copy of the last Report of the Newcastle-under-Lyne Agricultural Society, and informed the Council of the intention of the Committee to add, not only an agricultural division to their Library, but also to form a class of books on the sciences connected with agriculture, and institute a course of lectures on those topics. Mr. Mayer also addressed a letter to the President on the subject of Agricultural education, and on the advantages that would arise from printing and circulating a cheap periodical, illustrated with wood-cuts, and requiring all persons who gained prizes of the Society, in the mechanical class, to present models of such prize implements to the museum; concluding by a statement of the disposition so generally manifested in the agricultural associations throughout the country to promote the objects of the Society.

Peruvian Sheep.

Mr. William Danson of Liverpool, informed the Society of the Earl of Derby's intention to send twelve Alpacas, or Peruvian Sheep of the Llama tribe, to the Liverpool Meeting in July. Mr. Danson expressed the interest he felt in the naturalization of this animal for the mountain and other waste lands of the kingdom; and having succeeded in inducing Mr. Walton to compile a Memoir "on the Naturalization of the Alpaca," for the Natural History Society of Liverpool had [now offered a premium of 100*l.* on the first fifty Alpacas (namely, 2*l.* each) imported into this country in the course of two years from the 1st of July 1841, and hoped to find that every ship would in consequence be induced to bring a supply of this animal. Mr. Danson concluded by stating his firm persuasion of the national benefit that would result from the importation and naturalization of this animal; imports of its wool being now made to the extent of upwards of a million of pounds in value, and fabrics manufactured from it selling freely in the market, and that while the Alpaca wool was rising, the other wools were on the decline. Mr. Danson transmitted to the Council three packets of specimen-patterns of Alpaca manufacture termed the "Chusan Crape." The Alpaca, according to Mr. Danson's account, is generally of a jet black colour, and has a very long wool, finer than silk (some of the animals, however, being white, brown, grey, and mottled), and would be most suitable, when naturalized in this country, for the north of England, Devonshire, Scotland, and Wales, being naturally well adapted for the Scotch and Welsh mountains, being a native of the Cordilleras, or mountain district of Peru. The wool of the Alpaca would not enter into a competition with the wool of sheep, but rather with silk, being adapted for the finest manufacture, and especially for the fine shawl trade of Paisley, Glasgow, &c.; the yarn spun from the Alpaca having been already sent to France in large quantity. The wool of the Alpaca has no greasiness like wool, and the animal is less subject to the extensive mortality frequently occurring among sheep. About 100 Alpacas are now in this country.

Mr. Grey, of Dilston, presented an interesting Report of the proceedings of the Northumberland Agricultural Society; Mr. Wyley, a copy of the rules of the Rugeley Farmer's Club; and Mr. Read, of Regent Circus, submitted for inspection the improvements he had made in his probangs and injectors for cattle.

At a Council held on Wednesday, the 16th of June, present—Philip Pusey, Esq., M.P., president, in the chair, Marquis of Downshire, Earl Spencer, Earl Talbot, Lord Sherborne, Henry Handley, Esq., M.P., Thomas Raymond Barker, Esq., Edward Buller, Esq., M.P., French Burke, Esq., Colonel Challoner, Captain Edward Barrett Curteis, James Dean, Esq., Humphrey Gibbs, Esq., George Kimberley, Esq., John Kinder, Esq., J. Haughton Langston, Esq., W. Woods Page, Esq., William Shaw, Esq., and Christopher Thomas Tower, Esq.—William St. Quintin Esq., of Scampston Hall, near Scarborough, was elected a Governor, and the following gentlemen members of the Society:—

Phillips, Rev. John, Ludlow, Shropshire

Royal Agricultural Society of Ireland.

A letter was read from Edward Bullen, Esq., Secretary of the Royal Agricultural Improvement Society of Ireland, informing the Council that a vote of thanks had been unanimously passed by that Society, at a meeting held in Dublin, on the 3rd of June, to the Royal Agricultural Society of England, for their kind and valuable co-operation in promoting the views and objects of the new institution; and that a public meeting would be held in Dublin on the 19th of July, for the purpose of forming a committee to attend the Liverpool meeting as a deputation, and to confer in person with the Liverpool meeting on the most advantageous mode of mutually promoting the common objects of both societies.

German Agricultural Meeting.

Captain Stanley Carr, of Tüschenbech, in the Duchy of Lanenburg, and an Honorary Member of the Society, communicated to the Council a variety of printed programmes, issued by the Society of German Husbandmen and Foresters, in reference to their great annual meeting, to be held in the autumn of the present year; and assured the Council that any member of the Royal Agricultural Society of England who might attend the meeting, might rely on every possible attention and assistance on his part.

Mr. Handley informed the Council that the meeting in question would take place in the first week of the ensuing September, and be held at Dobberan, a small town in the Duchy of Mecklenburg-Schwerin, pleasantly situated on the northern coast of Germany, on the shores of the Baltic, and much frequented as a fashionable bathing-place, lying on the high-road between Wismar and Rostock, about 90 English miles in a straight line E.N.E. of Hamburg, and 120 N.W. of Berlin. The thanks of the Council were then voted to Captain Carr for this communication.

Wire-worm.

C. B. Fleetwood, Esq., communicated to the Society a detailed account of his mode of destroying the wire-worm, as successfully practised by him during a period of years, along with a model of his apparatus and specimens of the remedies applied. The Council referred this communication to Mr. John Curtis, F.L.S. (the celebrated entomologist), for his report on this subject to the Journal Committee.

Economical Manure for Cottagers.

George Kimberley, Esq., of Trotsworth, near Egham, Surrey, presented to the Society a copy of his address to the rural population on the leading principles of agriculture; and detailing a simple process by which they might obtain, without any expence, sufficient manure for their gardens or allotments to produce most abundant crops; and the mode of improving the quality and durability of such manure by a small sum expended upon it every year.

Manure from Green Crops.

William Bence Jones, Esq., of Aghalusky, near Bandon, in the county of Cork, presented to the Society several copies of his printed letter to his tenantry on the advantages attending their growing green crops for the purpose of obtaining supplies of manure for their land, recommending them to sow with clover and turnips just the same quantity of land that they then left as grazing; assuring them, that as a result they would get, at the very least, double the weight of food for their cows and horses as they at that time got from grazing, and that they would consequently be able to keep double the number of cows, and make twice the quantity of manure for their land; concluding by citing cases to illustrate the subject, and point out also the advantages of house-feeding the cattle; the management of turnip, clover, and potato crops, &c. Mr. Jones informed the Society that having the types still standing, he would willingly furnish a gratuitous supply of the pamphlet to members; and the Marquis of Downshire stated his approbation of the publication, as suited to the case of the Irish tenantry, and the fact that Mr. Blacker, the well-known agriculturist of Armagh, had requested to be furnished with 300 copies for his own immediate distribution.

Liverpool Meeting.

On the motion of Mr. Raymond Barker, Chairman of the Liverpool Committee, the Hon. Captain Spencer, M.P., and Mr. Woods Page, were added to the list of members of the Committee; and the President stated that, in order to afford every facility for the proposition of new members before July 7, the final date for election, previously to the meeting, the Council would adjourn to Tuesday the 6th of July, for the purpose of receiving the names of candidates for admission, instead of limiting the date of proposition to the 28th of June, as formerly arranged.

Mrs. Davies Gilbert, of Eastbourne, Sussex, informed the Council that she had kept 14 working bullocks all the winter, on her farm of 900 acres on Beechey Head, without their having had the epidemic; which her flock of 390 sheep (with their 393 healthy lambs) had also fortunately escaped: the soil being a chalk down, and therefore dry; and no more particular care having been taken of the stock than keeping them in good condition. Mrs. Gilbert also stated that she had recently had two new ponds constructed for watering the flock, on the plan described in the Journal (volume I., part 4, page 499), the bottoms being grouted with flints and grey lime mortar, from 9 inches to a foot in thickness; and which were found to answer very well: and had also built 4 houses for stall-fed cows, supplied with water by tanks receiving the rain from the roofs; the last tank being constructed solely of flints found on the land, and domed over with flints, having a cast-iron well curb at the mouth; as well as erected a lodge for cows, adjoining to a wash-house, for the purpose of keeping them as warm as is done in Holland.

Mrs. Coote, of Mornington House, near Clifton, called the attention of the Society to the immediate importance of giving encouragement to cottagers to plant reasonable breadths of potatoes, and to keep, to the best of their ability, an account of the cost and quantity of seed-potatoes planted; so that the produce might be ascertained. Mrs. Coote recommended the potatoes to be planted by the wife of the labourer, and at the present time, in drills, like celery; and suggested the excellent effect that would result in the encouragement of cottagers to industrious efforts, by the distribution of medals or sums of small amount among them.

The Council having taken into consideration the subjects of the Prize-Essays for 1843, and referred the drawing up of the conditions under which the Essays would be required to be treated by the competitors.

At a Council held on Wednesday, the 23d of June, present—Philip Pusey, Esq., President, in the chair, Marquis of Downshire, Earl of Aylesford, Earl Talbot, Lord Portman, Hon. Captain Spencer, Sir Charles Lemon, Bart., Sir Charles Gould Morgan, Bart., Thomas Raymond Barker, Esq., John Raymond Barker, Esq., Henry Boys, Esq., Edward Buller, Esq., French Burke, Esq., Colonel Challoner, John Walbanke Childers, Esq., Edward Davies Davenport, Esq., James Dean, Esq., Humphrey Gibbs, Esq., George Kimberley, Esq., John Kinder, Esq., William Shaw, Esq., John Villiers Shelley, Esq., and William Youatt, Esq.

Henry Petre, Esq., of Upper Brook-street, London, and Dunkenalgh, near Blackburn, Lancashire, was elected a Governor.

Liverpool Meeting.

The Royal Institution of Liverpool have intimated, through John Baines, Esq., their wish to afford the Members of the Royal Agricultural Society of England every facility of inspecting their Museum, and their willingness to grant the use of their Lecture Room, if required. The Mechanics' Institute having already granted the Society the use of their rooms for the central business of the Society, have also offered the use of their Lecture Room. The Athenæum have passed a resolution that admission to their Rooms will be given to all the non-resident Members of the Royal Agricultural Society of England during their visit to Liverpool. The Horticultural Society have made an offer of their Botanic Gardens, if required, for the display of agricultural produce. The Liverpool and Harrington Water Company have offered, through E. D. Falkner, Esq., to supply the Cattle-yard with water from their mains, free of expense to the Society. The Mayor of Liverpool has communicated, through R. Earle, Esq., his willingness to place the Council Room of the Corporation, in the Town Hall, at the disposal of the Society during their Meeting. Thomas Kirkland Glazebrook, Esq., the President of the Liverpool Library and Lyceum, has also transmitted to the Society the following resolution:—"That during the approaching Meeting, in Liverpool, of the Royal Agricultural Society of England ,for the promotion of that science, the members of that Association shall have free access to the Library, and liberty to take out such works as they may apply for, subject to such regulations as the Committee of the Library may make; and further, the free use of the Committee Room, when not engaged by the Proprietors; with any other facility which the Library has the opportunity of affording."

The thanks of the Society have been unanimously voted to the various parties who have thus evinced their interest in its proceedings.

Messrs. Holme, the contractors, have announced that the Cattle Yard and Dining Pavilion require only a few days to effect their completion; and Mr. Radley, of the Adelphi Hotel, Liverpool, has become the successful competitor for the contracts of the Council Dinner on the Wednesday, and the Great Dinner of the Society on the Thursday of the week of meeting.

East Indian Seeds.

Professor Royle, F.R.S., of the East India Company and King's College, presented to the Council a supply of Himalayan Pine seeds, for distribution among such of the Members as the Council might direct; and, the thanks of the Council having been unanimously voted to Professor Royle for this additional proof of his interest in the proceedings of the Society, the three packets of seeds—of the *Pinus excelsa*, the *Abies Webbiana*, and the *Pinus Deodara*—were distributed among the following gentlemen for their trial of the seeds, report on their respective merits and suitableness for the climate of this part of the empire, and a supply of new plants for further distribution among the Members of the Society; namely—The Marquis of Downshire, Earl Spencer, Earl Talbot, Lord Portman, Colonel Challoner, Mr. Kinder, Mr. Dean, Mr. Davenport, Mr. Shaw, Mr. Gibbs, Mr. Childers, and Mr. Shelley.

Preservation of Butter.

Henry Wood, Esq., of Bramsdean House, near Alresford, Hampshire, transmitted to the Council a jar of butter, as a specimen of the successful mode adopted for its preservation when that article is intended for export to foreign climates.

Mr. Wood informed the Council that this butter had been prepared on the 19th inst., according to the process adopted in eastern countries, where it was used for culinary purposes instead of hog's-lard, which the Mahometan law prohibited, and would keep for any length of time in a perfect state of preservation, although it contained no salt, or other additional substance. This preservative state of the butter was induced by the removal of scum, and the dissipation of the watery particles of fresh butter, effected by the *gentlest* possible application of sufficient heat to produce the result. Mr. Wood stated that in Asia this gentle heat was obtained by the natives by filling a large open earthenware pan with powdered and well-dried cow dung, and then setting fire to it, introducing into the midst of the burning cow-dung an earthen vessel containing the butter, which thus became melted; and when the scum, as it rose, had been successively removed, and the watery particles driven off by the heat, it was poured into a jar, and preserved for use. Mr. Wood suggested that a sand-bath, properly regulated, might answer the same purpose as the dried cow-dung, and as the process was so very simple, there could be no difficulty in preparing it; and that, when once prepared, the butter never "became tainted." Mr. Wood stated that he carried with him to the Cape of Good Hope some butter prepared in the same way, at Colonel Skinner's farm at Hansi, to the westward of Delhi, a year previously, and which was pronounced by the agriculturist Mr. Duckett, and others, to be superior to the salted butter of the colony; and, for culinary purposes, far superior to lard.

Mr. Wood stated his intention of exhibiting a specimen of this prepared butter at the Liverpool Meeting.

WINKFIELD DIBBLING MACHINE.

The Rev. W. L. Rham communicated an account of his new machine, which he had now nearly completed, and which it was his intention to exhibit at the Liverpool Meeting. This machine is intended by its inventor to introduce a perfect garden-culture on the largest farms; and to act, by convertible arrangements of its parts, either as a *scarifier*, a *scuffler*, or a *grubber*. This paper was referred by the Council to the Journal Committee.

WIRE-WORM.

Earl Talbot informed the Council of the success with which he had applied the refuse lime of gas-works (probably an impure sulphuret of lime, or lime combined loosely with sulphuretted hydrogen—a gas the most deleterious of all others to animal life) to the destruction of the wire-worm. Colonel Morewood, of Alfreton, Derbyshire, has also informed the Society of the decided effects he had experienced on his own land in preventing the appearance and ravages of wire-worm, attending the use of Crosskill's Clod-Crusher.

Mr. Ellison, of Sizergh Castle, Kendal, communicated a Paper on the turnip fly; Mr. Davies Gilbert, on the Belgian mode of conveying the *Bassin*, or warm food, to stall-fed cows; Mr. George Nettle, of Stoke, near Devonport, Papers on seed-corn, drill-sowing, and the agaricus or dry-rot; Mr. Chawner, Secretary of the Lichfield Agricultural Society, an Essay on Farm-yard Manure, by a member of that Society; and the Royal Agricultural Society of Ireland, their last printed Report.

The President laid before the Council the new part of the Journal just ready for publication, and particularly directed the attention of the members to the valuable and interesting paper which it contained on the cultivation of Northumberland, and which had been communicated by Mr. Grey, of Dilston.

INFIRMARY FOR DISEASES OF CATTLE.

Professor Sewell, of the Royal Veterinary College, St. Pancras, has informed the Society that the Governors of the College have been pleased to express their approbation of his efforts, formerly communicated to the Council, to establish a Cattle Infirmary, and supply the means of instruction in the treatment of diseases, by having engaged to undertake the medical care of the extensive dairy belonging to Thomas Flight, Esq. (formerly Laycock's dairy), Islington, free of any expense, on condition that the pupils who are desirous of practising that highly important branch of the veterinary art, might attend the same daily. The Governors having unanimously voted a grant of £100 to Professor Sewell, in consideration, and on account of, the expenses he had already incurred to the present Midsummer, have at the same time resolved to place at his disposal the further sum of £200 in furtherance of the same object. Professor Sewell has further stated, that Mr. Pusey, the President of the Royal Agricultural Society of England, having expressed his approbation of the plan originally proposed, and the Duke of Richmond, Mr. Handley, and other members of the Society having, at different times, visited the dairy and infirmary, and fully concurred with him in its eligibility in every respect for the intended purpose, he should spare neither pains nor expense to accomplish the views of the Royal Agricultural Society of England, in promoting the successful application they so anxiously desire, of the veterinary art to domestic animals in general; and that those pupils of the college who attended and underwent a satisfactory examination on these branches of practice and study, would have an additional clause, expressive of their proficiency on those points, appended to their respective diplomas.

NEW MEMBERS.

The following gentlemen have been elected members of the Society during the month.

Ackers, James, the Heath, near Ludlow, Salop
Adams, W. H., Boston, Lincolnshire
Algar, John Clifft, South Haningfield, Chelmsford, Essex
Allsop, Charles James, Burton-on-Trent, Staffordshire
Appleby, William, Eastfield, Alnwick, Northumberland
Arkwright, Edward, Rock House, Matlock, Derbyshire
Armstrong, George, Liverpool
Atkinson, Robert, Eppleton Hall, Houghton-le-Spring, Durham
Atkinson, Thomas, Kidside, Milnthorpe, Westmoreland
Atkinson, M., Peepy, Hexham, Northumberland
Aslin, Thomas, Redbourn, Hertfordshire
Aungier, Mark, Clarence Terrace, Liverpool
Baker, Samuel, Birch Hall, Kirby, Colchester, Essex
Barkley, C. T., Sunbury, Middlesex
Banning, Wm., Postmaster of Liverpool
Barke, George, St. Catherine's, near Doncaster
Bennett, Samuel, Shiffnal, Shropshire
Bentall, William, Heybridge, Maldon, Essex
Beeston, Samuel, Goldstone, Newport, Shropshire
Bold, Thomas, Liverpool
Bold, James, Liverpool
Borrett, Giles, Great Yarmouth, Norfolk
Bourne, William Kemp, Fisherwick, Lichfield, Staffordshire
Boydell, John, Brynalyn, near Chester
Bradshaw, Francis, Jun., Barton-Blount, near Derby
Branwhite, Charles Hammond, Guestingthorpe, Halstead, Essex
Bretherton, Joseph, Wavertree, near Liverpool
Briggs, John Cavill, Great Dunmow, Essex
Brook, Cunliffe, Erbistock Hall, Overton, Flintshire
Bromley, Rev. Walter Davenport, Wootton Hall, Ashbourne, Derbyshire
Bromley, Robert, (*Land Surveyor*,) Derby
Browning, Rev. Frederick, Titchwell Rectory, Lynn, Norfolk
Bryans, James, Belfield, Bowness, near Kendal, Westmorland
Bulkeley, Sir Richard Williams, Bart., Baron Hill, Beaumaris, N. W.
Bull, Thomas, Stockingford, Nuneaton, Warwickshire
Burne, Thos. Higgins, Lvyriton Hall, Newport, Shropshire
Burney, Sir Hanson, Bart., Sheepy, near Atherstone, Warwickshire
Butt, William, Sandiacre, near Derby
Butler, Thomas, Ballyconra, Ballyragget, Kilkenny
Butler, Henry, Tulse Hill, Brixton, Surrey
Cartwright, Nathaniel, Haugham, Louth, Lincolnshire
Caruthers, David, Grondra House, Chepstow, Monmouthshire
Cave, Charles, Bracknell, Berkshire
Challenor, John, Overton, Congleton, Cheshire
Chillingworth, Joseph, Trimpley House, Kidderminster, Worcestershire
Chitty, Edw., Guildford, Surrey
Christian, William, Claughbane, Isle of Man

Clarke, James, Gedney, Holbeach, Lincolnshire
Clifford, Henry Morgan, Perristone, Ross, Herefordshire
Cliffe, Anthony, Belle-Vue, Enniscarthy, county of Wexford, Ireland
Cobbett, William, Edmonton
Cobon, James, Well Hall, Lynn, Norfolk
Cobbold, Henry, Walton-on-the-Maze, Essex.
Cobbold, J., Ipswich, Suffolk
Cooch, Joshua, Harleston, near Northampton
Coulman, Robert John, Wadworth, near Doncaster
Cowell, John, Ibott, near Worcester
Coxe, Francis Lovelock, Newtown Lodge, Hungerford, Berkshire
Crakanthorp, Harvey, Eastham, near Chester
Crane, John, High Hubberly, Kidderminster
Cripps, Frederick, Dale Street, Liverpool
Critchley, Henry, Eaton House, Penkridge, Stafford
Cuthbert, James, Clayton-square, Liverpool
Daly, Denis, Liverpool
Daniel, John, Parsons Green, Fulham, Middlesex
Daniel, William, Burton-on-Trent, Staffordshire
Danson, William, 27, Great George-street, Liverpool
Darling, Thomas, Bean Desert Farm, Lichfield, Staffordshire
Dawkins, Henry, Sandgate, Kent
Day, John Hill, St. Neot's, Huntingdonshire
Dayman, John, Mambury, Bideford, Devonshire
Dearsden, James, Rochdale, Lancashire
Denman, Arnold, Willingdon, Eastbourne, Sussex
Dicken, Thomas, Loppington House, Wem, Salop
Doyne, Robert, Wells, County of Wexford, Ireland
Drew, Pryce, Glanhafren, Newtown, Montgomeryshire
Dyke, Henry, Croftybulla, near Monmouth
Earl, Thomas, St. Ives, Huntingdonshire
Earl, Robert, Buckworth, near Huntingdon
Ellis, James, Barming, Maidstone, Kent
Elwood, William, Spittal, near Kendal, Westmoreland
Evans, Robert, West Hallam, near Derby
Eyton, Thomas Campbell, Dinnerville, Wellington, Shropshire
Fagg, George, Bedfont, Middlesex
Fardell, Charles, Holbeach Lodge, Horncastle, Lincolnshire
Fellows, Henry, Hurstbourne Park, Whitchurch, Hampshire
Field, Jonathan, Laceby, Limber, Lincolnshire
Field, John, St. Alban's, Hertfordshire
Flitton, William, Ringstead, Thrapstone, Northamptonshire
Fookes, Henry, What Church, Blandford, Dorset
Forster, William, Burradon, Alnwick, Northumberland
Frower, Edward Spencer, Welford, near Nottingham
Garven, Edward, Warrington, Lancashire
Geldard, George Atkinson, Aikrig End, Kendal, Westmoreland
Gervais, The Rev. Francis, Cecil, Tyrone, Ireland
Grey, Edward, Chapel Street, Liverpool
Gibbon, Thomas, Wolverhampton, Staffordshire
Gibson, Richard, Liverpool
Gist, Samuel Gist, Wormington Grange, Winchcombe, Gloucestershire
Glendinning, Alexander, Ash Grove, Sevenoaks, Kent
Goddard, George. Great Cell Barns, St. Alban's
Goodacre, John, Desford, near Leicester
Gore, Henry, Blessington, Ireland
Gorst, Joseph, Sealand, near Chester
Gorriuge, James, Selmiston, Lewes, Sussex
Gower, A. Lewes, Castell Malgwyn, Pembrokeshire
Gruce, William, Sattwick, Morpeth, Northumberland
Gregory, Thomas, Meadow-place, Bakewell, Derbyshire
Greenall, Gilbert, Walton Hall, Warrington, Lancashire
Griffith, David White, Bodegroes, Pwllheli, Carnarvonshire
Hall, John, Arnold Lodge, near Nottingham
Hall, Lorenzo, Milford, near Derby
Hammond, Samuel, Audnam, Stourbridge, Worc.
Hampson, James, High Leigh, Warrington, Lancashire
Harbottle, L., Alnwick Grange, Hexham, Northumberland
Harding, Samuel, Alpraham, Tarporley, Cheshire
Harris, Edward
Harris, William, Laurel Grove, Wrexham, North Wales
Harrison, Thomas, West Derby, Liverpool
Harrison, William, Walsall, Staffordshire
Harrison, John B., Douglas, Isle of Man
Harrop, Jonah, Bardoley, Ashton-under-Lyne, Lancashire
Harvey, Matthew, Balderton, Newark, Notts.
Hatfield, Charles Taddy, Hartsdown House, near Margate, Kent
Hearn, William, Newport, Isle of Wight
Heath, Samuel, Frankton, Southam, Warwickshire
Henderson, Edward, Lowick, Wooler, Northumberland
Higginson, Rev. John, Thormanby Rectory, Thirsk, Yorkshire
Hildyard, Colonel, Stokesley, Yorkshire
Hinckes, John, Leicester
Hinxman, John, Sudbury Grove, Middlesex
Hodgson, Joseph, Biggins Old Hall, Kirkby Lonsdale, Westmoreland
Hodsen, James, Jun., Falmer Court, Lewes, Sussex
Hollock, John, Mountains Town, county Meath, Ireland
Hollis, Wm., Shirenewton House, Chepstow, Monmouthshire
Hopkinson, Frederick, Benningholme, Hull, Yorkshire.
Humphreys, John, Brose, Wrexham, N. W.
Humphreys, John, Berriew Rectory, Welsh Pool, Montgomeryshire
Hunt, Robt., jun., Stamford, Lincolnshire
Hunt, George, Preston, Lancashire
Ingram, George, Chetwynd, Newport, Shropshire
Ivens, Charles, Cranford, Kettering, Northamptonshire
Jardine, William, 67, Grosvenor Street, London
Jeffs, William, Costow House, Marston St. Lawrence, Northamptonshire
Johnson, Robert, jun., Duke-street, Edge Hill, Liverpool
Johnson, William, St. Helen's, Prescot, Lancashire
Johnstone, Henry James, Speen, Newbury, Berks
Jolleff, Robert, Long-Ashton, near Bristol
Jones, George, Starton, near Warwick
Jones, William, Stone Hill, Liverpool
Jones, William Bence, Agalusky, near Bandon, county of Cork
Jones, Matthew Easton, Wilby, Wellingborough, Northamptonshire
Jones, John, Compton Marsh, Farringdon, Berkshire
Jones, Thomas, Wem, Mostyn, Holywell, Flintshire
Kemp, William, Great Tey, Colchester, Essex
Kerl, William, Annables Farm, Kinsborne Green, Harpenden, Hertfordshire
Keogh, Patrick F., Liverpool
Kingsworth, Adolphus, Brookland, near Romney, Kent
Lake, Robert, Milton, near Canterbury
Lance, the Rev. John Edwin, Cliffe, Blandford, Dorset
Langhorne, O., Mill Hills, Hexam, Northumberland
Laxton, William, Thorney, Peterborough, Northamptonshire
Leighton, Andrew, Wellingborough, Northamptonshire
Leonard, Patrick, Soho Street, Liverpool
Levett, John, Wicknor Park, Lichfield, Staffordshire
Littledale, Harold, Liscard, near Liverpool
Llewellin, Richard, Tregwynt, Fishguard, Pembrokeshire
Lloyd, Edward, Cefw, St. Asaph, N. W.
Lloyd, the Hon. Thos. Pryce, Pengwern, near St. Asaph, N. W.
Long, George, Berkeley, Gloucestershire
Lowe, William, Liverpool
Lynn, William, Liverpool
Mac Grigor, Daniel, Walton, near Liverpool
Macfarlane, John, Speke, near Liverpool

Mackie, John, Bambrough Hall, Belford, Northumberland
Mac Vicar, Duncan, Liverpool.
Maddison, Thomas, Wandon, Wooler, Northumberland
Malins, L., Daw-y-Gaaig, Newton-Nottage, Glamorganshire
Manning, John Leach, Bardon Park, near Leicester
Marklove, Charles, Oil Mills, Berkeley, Gloucester
Maud, Charles Theobald, Coitrehene, Cardiff, Glamorganshire
Menzies, Henry, Manchester
Miller, Bartlett, Chapel Brampton, near Molton, Northamptonshire
Miles, Thomas, Keyham, near Leicester
Monkhouse, John, the Stowe, Hay, Herefordshire
Mossop, John, Moulton Marsh, Spalding, Lincolnshire
Mosley, Tonman, East Lodge, Burton-on-Trent, Staffordshire
Mumford, Robert, Kirby Hall, Colchester, Essex
Naylor, George, Plas Clough, near Denbigh
Newman, William, Darley Hall, Barnsley, Yorkshire
Newton, William, Bay Farm, near Bath, Somersetshire
Nicholson, E. A., Barford-St.-Martin, Salisbury
Nott, J. C., Hallow, near Worcester
Oatley, John, Bishton, Wolverhampton, Staffordshire
Ogilvie, Alexander, Mere Hall, Knutsford, Cheshire
Oliphant, Laurence, Condie, Bridge of Earn, Perthshire
Onslow, the Hon. Colonel C., Upton House, Alresford, Hampshire
Orrell, John, 33, Great George Street, Liverpool
Osborn, George, Waterloo Terrace, Northampton
Peers, Joseph, Ruthin, Denbighshire, N. W.
Peele, Richd., Long Sutton, Wisbeach, Lincolnshire
Pemberton, Rev. R. M., Millichop Church, Stretton, Salop
Pennant, Rev. Thomas, Brynbella, St. Asaph, Flintshire
Peppercorn, William, St. Neot's, Huntingdonshire
Peppercorn, George A., St. Neot's, Huntingdonshire
Phelps, Rev. H. W., Snodland Rectory, Maidstone, Kent
Phillips, Thomas John, Landue, Launceston, Cornwall
Pinchin, David Rice, Box, near Bath
Pinfold, Charles, Walton House, Fenny Stratford, Buckinghamshire
Plumtre, J. Pemberton, M.P., Fredville, Wingham, Kent
Pocock, Richard, Hedges Farm, St. Alban's
Pollock, Arthur, Mountains Town, county Meath, Ireland
Porter, J., (*Architect*), Oswestry, Shropshire
Potterton, Nathaniel, Boughton Park, near Northampton
Preston, J.R., Liverpool
Purcell, Peter, Hon. Secretary of the Royal Agricultural Improvement Society of Ireland, Halverstown, Kilcullen, Ireland.
Pym, Charles, Lansdowne Lodge, Cheltenham, Gloucestershire
Rand, Joseph, Hadleigh, Suffolk
Ray, John, Heanor, near Derby
Remmington, Reginald, Stricklangate, Kendal, Westmoreland
Richards, Edward Priest, Cardiff, Glamorganshire
Richards, John Matthews, Plas Newydd, Cardiff, South Wales
Riddle, George, Walton House, Tewkesbury, Gloucestershire
Rigby, Robert, Maghull, near Liverpool
Robinson, Thomas, Old Bold Hall, Warrington, Lancashire
Robinson, John, Skinner House, Lydd, New Romney, Kent
Robson, John. Woolsington High House, Newcastle-on-Tyne
Rogers, Samuel, Douglas, Isle of Man
Roscruge, John, Roscruge St. Anthony, Helston, Cornwall
Roscoe, James, Knutsford, Cheshire
Rudgard, Edward, Lincoln
Rycroft, Sir Richard H. C., Bart., Marydown Park, Basingstoke, Hampshire
Sandbach, Henry Robertson, Liverpool
Sandbach, Samuel, jun., Woodlands, near Liverpool
Saul, William, High Ferry, Sibsey, Boston
Scott, L., Keisby, near Folkingham, Lincolnshire
Shuldham, Wm. Samuel, Dunmanway, county Cork, Ireland
Shute, Robert, Liverpool
Simon, James, Greenfield, Holywell, Flintshire
Simpson, Wm., 29, Saville-row, London
Sitwell, Charles John, Stainesby House, near Derby
Smallwood, John, Tower Hill, near Birmingham
Smith, Rev. L. Loraine, Rassenham, Stoney-Stratford, Bucks
Smith, Thomas, Shareshill, Wolverhampton, Staffordshire
Smith, John, Cleatlam, Staindrop, Durham
Smith, Wm., Whittlesey, Peterborough, Northampton
Smith, George, Berkeley, Gloucestershire
Smith, John, Lewes, Sussex
Spraggot, L., Nafferton, Hexham, Northumberland
Squire, John Burder, Cross Hall, St. Neot's, Hunts.
Squires, Richard, Walton, near Liverpool
Stainer, Charles, Uppington, Wellington, Salop
Staniforth, Samuel, Liverpool
Staunton, John, Dalby, Spilsby, Lincolnshire
Stone, Richard, Kirby, Colchester, Essex
Strongitharm, George, Rushall, Walsall, Staffordshire
Swan, the Rev. Francis, Rector of Sausthorpe, Spilsby, Lincolnshire
Swinburne, Joseph, Knutsford, Cheshire
Sybray, Robert, Matlock Bath, Bakewell, Derbyshire
Talbot, Wm., Hawkeshead, Scarisbrick Hall, Ormskirk, Lancashire
Taverner, Samuel, Peterborough, Northamptonshire
Tench, Edward, jun., Plas-Newydd, Rhuabon, Denbighshire
Thomason, Henry, Kemberton, Shiffnall, Salop
Thompson, Rev. Cornelius, Vicar of Elksley, Retford, Notts.
Todd, Joseph, Sutton-Coldfield, near Birmingham
Tomlinson, William, Biggins Hall, Kirkby Lonsdale, Westmorland
Tomlinson, Richard, Shelley Hall, Ongar, Essex
Twemlow, Thomas, Peatswood, Drayton, Shropshire
Tyler, Rev. Roper Trevor, Llantrithyd, near Cardiff, S. W.
Tyrer, James, Booth, near Liverpool
Upperton, Robert, Lansdowne Place, Brighton, Sussex
Vickers, Valentine, Ellerton Grange, Newport, Salop
Walker, Henry Batcheler, New Romney, Kent
Warner, Henry Lee, Tibberton Court, near Hereford
Watt, James, Dublin
Watson, L., Allerwash, Hexham, Northumberland
Waterhouse, Alfred, Aigburth, near Liverpool
Waterhouse, Rogers, Aigburth, near Liverpool
Waterhouse, Daniel, Aigburth, near Liverpool
Webb, Wm., Stourbridge, Worcestershire
Webb, the Rev. William, D.D., Master of Clare Hall, Cambridge
Webb, Theodore Vincent, Clare Hall, Cambridge
Welch, Rev. Thomas Coleman, Lower Vicarage, Pattishall, Towcester, Northamptonshire
Wheatcroft, William, Cromford, Derbyshire
White, James, Colford, Gloucestershire
White, Matthew, Tripping-Kennet, Ross, Herefordshire
Whitmell, John, Crick, Daventry, Northamptonshire
Wilberfoss, Thomas, Wetwang, Driffield, Yorkshire
Wilkinson, Octavious Robert, Eaton-Socon, St. Neot's, Huntingdonshire
Williams, Edward, The Cross, Mold, Flintshire, N.W.
Williamson, Hugh Henshall, Greenaway Bank, Burs-
Wilson, James, Haydock, Newton-le-Willows, Lancashire
Wilson, Hon. and Rev. Robt., Ashwell Thorpe, Wymondham, Norfolk
lem, Staffordshire
Wood, Theodore, Rennington, Alnwick, Northumberland
Woodman, Richard, Jun., Housedean Farm, Falmer, Lewes, Sussex

Woodward, Joseph, Birlingham, Pershore, Worcestershire
Woodward, Thomas, Corn Exchange, Liverpool
Wortley, N. W., Ridlington, Uppingham, Rutlandshire
Witherington, L., Charlcote Mill, Stratford-on-Avon
Wren, L., Perry Barr, near Birmingham
Wright, O., Butcherwell, Hexham, Northumberland
Young, Joseph, Aby, Alford, Lincolnshire

AGRICULTURAL REPORT.

GENERAL AGRICULTURAL REPORT FOR JUNE.

The great importance which is always attached to the state of the atmosphere at this season of the year, induces us to enter somewhat minutely into its effect since the concluding date of our last month's report. From the 1st until about the 8th, we were favoured with fine westerly winds, thereby producing incalculable benefits not only to the growing crops of grain, but vegetation in general. The succeeding week was marked by a continuance of cold weather, which tended materially—particularly as the absence of rain began to be complained of in all parts of England—to check the progress of the plants. However, the wind having shortly after the 16th shifted round to the South-west, in which quarter it has steadily continued, and some fine showers being thereby produced, incalculable benefits have accrued to farming in general, and it is highly pleasing to observe that the pastures, sheep downs, &c., which at one period were looking parched up, have rapidly assumed their usual appearance. True it is, that on some of the hilly and chalky soils, the wheat, barley, and oats, do not wear so healthy a colour as could be desired; but a few days more of fine genial temperature will, we trust, set all to rights. Wheat is now in full ear, in the forward districts; and such will doubtless be the case in the North in the course of the first week in July.

It will be learned with regret, that the wire-worm has committed most extensive ravages, both on light and heavy soils; indeed, to such an extent have their depredations extended in some parts of Northamptonshire, Warwickshire, Gloucestershire, &c., &c., that scarcely more than half a crop appears to be anticipated by the growers. Leaving these casualties out of the question, and calmly considering the prospects of our farmers, we are decidedly of opinion that they have been considerably over-rated by some persons. We have heard it stated, that there is every probability of the forthcoming yield of wheat being great, almost beyond recollected precedent. It is to be most earnestly desired that such may be the case, but we cannot give a tacit admission to that, which to us appears somewhat at variance with facts. Comparatively speaking, the breadth of land under wheat culture is much on the increase, which will possibly make good any actual deficiency which may arise when the corn may be submitted to the process of thrashing; yet our impression is that the acreable produce of wheat will not exceed an average. Barley promises well on the whole, and bids fair to make a good return. Oats seldom, if ever, looked finer, and we should say that the growth will exceed even that of last season.

With respect to the stocks of wheat at this time in the hands of our farmers, we should say that, on account of the immense quantities which have been thrashed out during the month, and transmitted to the different markets, they are now becoming limited; yet we trust there will be found an adequate quantity to meet every exigency until after the ingathering of this year's produce. These observations refer to almost every county in the United Kingdom.

It is truly pleasing to observe that the present appearance of the hop bine, not only in Kent but also in Sussex, is indicative of a very extensive produce. Even in unfavourable situations the bine is remarkably strong and healthy, while scarcely any insects can be discovered, even on a very close examination. This cheering circumstance will, no doubt, have some influence upon future currencies. Many bets have been laid upon the forthcoming duty at from 135,000*l.* to 145,000*l.*; but we are decidedly of opinion that it will exceed the latter sum.

The clip of wool this year has been unusually large, which has had the effect, as might be reasonably anticipated in the present state of the wool trade, of lowering the value of that description of produce, while further depressed rates may be looked forward to.

As to the crop of hay, this has proved extremely good, and in the southern districts it has reached the stack yards in admirable order. The hay harvest is expected to be commenced in the northern counties in a few days, should the weather prove fine.

The various markets of consumption have been fairly supplied with corn, the demand for which has continued steady, at but little variation in the quotations. The quantities of cattle have been, notwithstanding the epidemic has been complained of, tolerably extensive, while the sales have gone off at, in some instances, a trifling reduction in prices. The wool trade has been heavy; but the value of hops, and most other farm produce, has been well supported.

The following is our usual monthly statement of the supplies of fat stock exhibited in Smithfield cattle market, and the prices realized:—

The number of beasts have embraced 11,250; of sheep and lambs, 157,212; of calves, 1,100; and of pigs, 3,002; while the quotations have ranged as follows:—Beef, from 3s. to 5s.; mutton, 3s. 2d. to 5s.; lamb, 5s. to 6s. 6d.; veal, 4s. 2d. to 5s. 6d.; and pork, 4s. to 4s. 10d. per 8lbs. to sink the offals.

The general quality of the arrivals from our great grazing districts has been on the improvement, yet a large number of lame beasts and sheep has appeared on the market. On most occasions, there has been a numerous attendance of both metropolitan and provincial dealers, who have purchased slowly, at a trifling depression in the currencies. From Scotland, the receipts of stock have been on the decrease—they having embraced only about 700 beasts, and 1,200 sheep; while from the Isle of Wight, not more than 100 lambs have come fresh up.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, June 30, 1840, and Monday, June 28, 1841. *At per 8lbs. to sink the offals.*

	June 30, 1840.			June 28, 1841.		
	s. d.		s. d.	s. d.		s. d.
Coarse & inferior Beasts	3 2	to	3 4 ..	3 4	to	3 6
Second quality do.	3 6		3 8 ..	3 8		3 10
Prime large Oxen......	3 10		4 2 ..	4 0		4 6
Prime Scots, &c.......	4 4		4 6 ..	4 8		4 10
Coarse & inferior Sheep	3 4		3 8 ..	3 4		3 6
Second quality do.	3 10		4 0 .	3 8		4 0
Prime coarse woolled do.	4 2		4 6 ..	4 2		4 6
Prime Southdown do..	4 6		4 8 .	4 8		5 0

	s.	d.	s.	d.		s.	d.	s.	d.
Lambs................	5	0	6	0	..	5	0	6	0
Large coarse Calves ..	4	10	5	0	..	4	2	4	8
Prime small ditto.	5	2	5	4	..	4	10	5	4
Large Hogs...........	4	0	4	6	..	4	0	4	6
Neat small Porkers ..	4	8	4	10	..	4	8	4	10

SUPPLIES.

	June 30, 1840.	June 28, 1841.
Beasts........	2687	2,280
Sheep and Lambs	26,660	30,680
Calves................	216	175
Pigs.................	505	413

Up to Newgate and Leadenhall markets, the arrivals of slaughtered meat from Scotland and various parts of England, have consisted of about 300 carcases of beef; 1,320 ditto of mutton; 400 ditto of lamb; 800 ditto of veal; and 3,000 ditto of pork; while the supplies of London killed meat have proved extensive. Trade, generally speaking, has continued in a sluggish state, at lower rates.

CALENDAR OF HORTICULTURE FOR JULY.

After the tremendous storm of May 27, when "fire mingled with hail" literally ran along the ground, desolating crops and dwellings also in the south and middle of Berkshire, the temperature, which had attained 80°, sensibly receded; the second week of June becoming keen as March, with a parching easterly current, that has operated injuriously on some fruit trees, and checked every species of vegetable. The gardener, in common with the agriculturist, is exposed to casualties and natural agencies that greatly interfere with his operations; thus it happens in dry periods like the present, which prohibit many removals and transplantations, that when they are effected in time, procure the strongest vegetables of the winter—such as broccoli, the savoy, Brussels' sprouts, and celery. But the wind has become fickle and variable, and by the time this calendar meets the reader, it is reasonable to hope that the earth may be moistened with gentle and warm rains which may facilitate seasonable operations.

The Fruit Garden.

Contrary to our usual course, we shall commence our directions with this department, because the best fruit trees require the earliest attention. A variety of opinions prevails concerning the precise period when the peach, nectarine, and apricot ought to receive their summer pruning. It has been stated that "there is a very great advantage in beginning the work betimes in the summer, clearing the trees from all ill-placed and luxuriant wood, and training the useful shoots in a proper direction;" and for the reasons assigned, that the sun, air, and gentle rains, will have a proper access, and promote the growth and flavour of the fruit, ripen the wood, and harden the shoots—all which are indispensable to the production of perfect bearing wood, and good fruit next year.

These are truths; the theory is sound, and is borne out by experience. But the facts themselves point out the time; for if pruning and training be performed too early in summer—that is, generally before the first of July—a forest of secondary weak shoots will be the inevitable result.

In the early part of the present month, the best situated spring shoots, which are situated near the origin of the present bearing shoots, ought to be laid in connectedly, in a direction corresponding with the latter, which will, at the winter pruning, be cut quite back to the successional bearers.

We have before remarked, that the fruitful shoots of next year are those which are produced in the current spring. Thus then, the July regulation is what the French term *à remplacement*; and by it the bearing wood is, or ought to be, preserved in sufficient quantity, and in vacant spaces, so as to add to, rather than substract from, the furniture of the tree, and to render it, according to the gardener's language, "green throughout." Every ill-placed back and foreright shoot ought also to be displaced, and thus all the conditions above alluded to, will be timely complied with and secured.

Apple-trees on walls, and espaliers, or trained as open dwarfs, will now have so far ripened their lateral spring wood as to authorize the proper foreshortening of them—a process which is the first operation of what is called "spurring." Every such projecting lateral ought to be cut or snapt off half way, or rather by two-thirds of its length. The *rationale* may be thus described. Every leaf has a bud at its base; the uppermost buds however are those which grow and elongate the shoot; when, therefore, the most active part is removed, those buds on the lower remaining portion become stimulated and enlarge; the two upper ones swell most, and from these one or more shoots arise, which would elongate considerably by the end of the growing season. When they have pushed a joint or two, the shoot should again be cut back at the bud below the one whence the lowest of these shoots arises; and this second operation tends still further to enlarge the embryo buds near the base of the shoots, from which one or more fruitful buds may be developed. If the uppermost eye break a second time, the shoot must again be cut back one joint below the point where it was last stopped.

Pears are occasionally treated in the same way, and wall-trees require it; but dwarfs and standards should be left more to their own spurring, which is the result of maturity and moderate luxuriance. When spurs are so formed, it will be proper to cut the shoots back to the fruitful eyes; in this respect pear trees differ from apples—they are far less productive of redundant wood.

Fig trees.—Train in the fruitful shoots to expose them to the sun and reflected heat; never top or shorten any, but cut the superfluous parts quite away.

Vines demand reiterated attention. They develope fresh laterals, and extend other leading shoots continually; the fruit is the object, and now, being in blossom, no shoot should advance more than one leaf-joint beyond that at which it was stopped at the former regulation. Abercrombie justly observed, above fifty years ago, that where the bearing shoots are kept well exposed, nailed in, and liberated from all crowding secondaries, "the bunches of grapes will be large and perfectly grown; and every bunch will also ripen more regularly and sooner, by at least three weeks, than when the vines are neglected and permitted to be run over with useless shoots." We may add, that the single, distant, long-rod training, facilitates the above practice, and enables the pruner to keep all his leaders open to the sun, with less than half the trouble which the irregular fruit tree form of a vine requires.

Budding in general may be begun, observing that a free state of the bark is promoted by showers, a moist soil, and south-westerly soft winds; therefore the propitious periods ought to be prepared for and observed.

Bud Apricots upon muscle-plum, or seed apricot stocks; peaches and nectarines in the same manner; apples upon apple, pears upon pear or quince stocks; medlars upon hawthorn. We hold it sound doctrine, that a stock may improve or degrade a bud or graft; and therefore that the better and more noble the stock, the more improved, in all probability, will be the inserted member. Lindley has lately noticed this fact, and we coincide with him in opinion, deprecating the notion that the wild crab, or other low and depressed stock, can enrich a scion; at all events, we are certain that growth is undeniably affected by grafting, whatever may be its influence upon the quality of fruit.

VEGETABLE DEPARTMENT.

Transplant to permanent beds, a full crop of broccoli, savoy, and winter cabbage. The work should be done in showery weather, otherwise each hole must be filled with water before planting; choose different periods throughout the month.

Endive requires rich, fine land, prepared by digging in some vegetable manure. If a bed be formed, spread the manure, dig and plant as the work proceeds one foot asunder; thus each row can be watered as it is formed, without uselessly trampling upon the ground. Persons would do well to think of this precaution even in sowing; and thus all things being in drills, the hoe can act freely, and the surfaces made neat and kept in orderly condition.

Plant out May-sown cauliflowers two feet plant from plant; water each at the time, and again if they flag in any degree.

Celery.—Earth up the plants already in trench, but the first and second week of this month is quite early enough for the main supply. Select an open, light, and rich piece of ground; dig the trench seven inches deep, throwing the earth on each side. If a series is to be planted, let the trenches be three-and-a-half to four feet asunder from the centres. Then lay three inches of rotten manure over the loose earth at the bottom, and dig it in. Remove the largest plants from the nurse or seed bed, allowing a sufficient number to stand from four to six inches apart, according to the final growth of the variety; large red giant celery will require nearly eight inch spaces. Take off every sucker, and injured leaf; put the plants into a large garden pan of water, one by one, so as to prevent shrinking; plant, and fix them firmly, and water each effectually. Watering must be attended to every evening in dry weather, and if the sun be powerful, the trenches should be shaded during the whole day.

Plant Cos, Silesia, and indeed any favourite lettuce, in rows; the plants twelve inches asunder. These lettuces often fly to seed; it is therefore always preferable to repeat successional sowings in freshly digged and very rich beds, and to thin out the seedlings, first to three, then to six-inch distances, using them as salad; and finally leave the plants twelve inches apart, to be tied up for hearting as required.

Sow at any time a few carrots, and onions for drawing young, small salading as wanted, and the last crop of spring broccoli not later than the first week.

Sow a full crop of turnips in an open situation, to come in from Michaelmas to the end of the year.

After the *second week* sow cabbage seed for coleworts or greens; this vegetable is now rarely seen, but it is truly delicious, and more finely flavoured than the mere sprouts of cut plants.

Transplant the leeks that are strong and well formed; manure a bed amply, and apply an ounce or two of nitrate of soda before digging the ground; then strike drills three inches deep, and a foot apart. With a strong iron-shod dibble make holes, five inches deep, and after trimming away straggling roots and offsets, drop a leek perpendicularly into each hole, adding enough of leaf mould, or very rich earth, to cover the fibrous roots; and finally, pour water to fix the leek. Repeat the waterings, but keep the plant upright in its case, which acts as a sheath to the growing plant.

FLOWER-GARDEN AND SHRUBBERY.

Take up bulbous roots, dry them, and lay them up for autumn. Pipe or layer pinks and carnations, both succeed by layers. *Dahlias* are now advancing rapidly, and we are told receive much benefit by being watered with a weak solution of nitrate of soda; one pound is enough for twelve gallons of water, and even this should not be repeatedly applied, as a very small quantity only of saline matter is ever taken up into a vegetable. Whenever it agrees with a plant, the foliage assumes a deep rich tint.

Begin to propagate geraniums; the scarlets in the open ground prosper at any time, and it is sufficient to place a cutting in the soil; but the fancy *Pelargonia* require some attention. First select a stout cutting from any favourite that is out of flower; it is of little avail to take a weakly slip. A green but half-ripe shoot, nearly a quarter of an inch in breadth, and of three joints, will succeed when, in five instances out of six, a poor spindling cutting must fail; mix together equal parts of two-year old leaf-mould and silver sand, fill a thumb-pot (size 80), and fix the cutting one joint deep. If watered and plunged in a frame, having a gentle bottom heat of 75 or 80, roots will form directly; but cuttings taken early in July require no bottom heat, but merely shade and atmospheric warmth. Heat is required after the end of the month.

When cuttings can be taken the parent plant is ready, and ought to be cut down to such lively buds which will produce the best and most compact figure; and with this object in view, they cannot be cut too low. When headed down and cut over, each plant should be retained in a shady frame, and receive moderate watering till the buds form new shoots. Then, but not before, shake the soil from the outer roots; cut those off, reducing the inner ones to a compact ball, which place in a 48 or other small pot, using light, turfy loam, sand, and about a third part of brown fibrous bog earth; water moderately, and protect the plants till they grow freely, then expose them to the air.

The cuttings must be kept a little moist, and as they grow are to be nipped, or cut back to buds, so as to acquire a bushy compact figure.

Keep all the departments weeded, clean, and neat; mow lawns; roll gravel walks; remove weeds, and trim off superfluous shoots from evergreens and deciduous shrubs.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF JUNE.

The markets generally, since our last review of the state and prospects of the corn trade, have been plentifully supplied with all descriptions of agricultural produce of home growth, but the demand has been, in a certain measure, liberal. In the value of wheat, a trifling decline must be noted, and an increase in the duty charged on foreign wheat when entered for home consumption, must also be noted, in proportion to the depreciation which had previously occurred in the price. In common seasons, the deliveries of grain by the farmers, during May and the summer months generally, are less than the demand requires; and an improvement in prices, particularly in those of wheat, is naturally calculated on as the certain consequence of this circumstance. In this respect, however, this season, in as far as it has yet progressed, is different from the average of those which have preceded it; for, as we have already mentioned, the supplies of every description of agricultural produce have been rather larger than the consumption has required, and thereby has a most unanswerable argument been produced in favour of the doctrines and principles of those who believe that the rapid improvement which agriculture is undergoing throughout the United Kingdom, must speedily be attended by a production of all the necessaries of life fully sufficient for the comfortable support of the entire population. Indeed, from the present aspect generally of the corn trade, it is very apparent that that most desirable period has already arrived; for during the last hundred years at all events, we have not one example of two notoriously bad crops, succeeded by a good and abundant one, being attended by the same favourable consequences as those which we have now the satisfaction to record. The decline in prices cannot in any respect be attributed to any falling away in the quantities of agricultural produce now required for the general consumption; for in no article is there any deficiency in this respect complained of. The wages of labour continue to be fully equal to all the expences of living comfortably; and although certainly the demand for labour is not so extensive as it was sometime ago, still employment at fair wages is within the reach of all those who feel industriously disposed; and in no quarter do we see or hear of multitudes collected together, demanding food or employment. We must admit, however, that, in several of the manufacturing districts, the demand for workmen is not so *brisk*—if we may be permitted to make use of a commercial *expression*—as could be desired; but this is not caused by the high value of provisions, but is the natural consequence of the injurious experiment which we have during the last three years made, in the importation of foreign agricultural products for home consumption. The people of the United Kingdom cannot afford to employ foreign agricultural labourers in the growth of provisions, and their own workmen at the same time. The money paid to the foreign land proprietor for the produce of his fields, cannot also be paid to our own workmen. The ruinous remittance of specie to the continents of Europe and America, which the bad crops here of 1837-8, and 1839, rendered necessary, has been attended by consequences exceedingly prejudicial to the best interests of industry throughout the British Empire. By no effort of labour, nor of commerce, can this money be drawn back into the country from the same channel in which it has been absorbed. The German boor and Polish serf, by whose toil wheat is produced, are not enabled by their master's pay to them, to consume wheat; nor can they afford to dress themselves in British manufactured goods. The transmission of their agricultural produce to the United Kingdom cannot be attended by the importation into their harbours or markets of any additional quantity of British manufactures for their use; and therefore, however great may be the value of foreign grain consumed here, not one farthing is thereby added to the value or to the quantity of our manufactured goods exported, the entire payment being made in specie to the foreign masters of the soil. To the artisans, and generally to all the productive classes throughout the United Kingdom, the immense importation of foreign grain which late unfavourable seasons have rendered necessary, has been attended by consequences in every way most disadvantageous; and of this fact they are so perfectly convinced, that amongst the most intelligent portion of them, the senseless cry of "cheap bread" has as yet had not the slightest influence. Had the twelve or fifteen millions sterling, in hard money, which during the last three years have been remitted to foreign nations in exchange for agricultural produce of foreign growth, been paid to our farmers at home, that sum would not have been totally abstracted, as it has unfortunately been, from the wealth of the British Empire; but it would have now been in active circulation at home, and would have been increasing the quantity of labour, and consequently adding to the wages of the labourers at home. But this would not have been the limit of the benefit which would have resulted from a different application of this large amount of money, to that which a virtually free trade in corn with foreign nations has latterly occasioned. It would, under other circumstances, have rendered money plentiful and easy; and consequently it would have very considerably reduced the annual interest now payable by those who have the means of productively employing it. It would have been embarked in extensive public and private improvements. It would have been employed in the formation of additional railways, harbours, canals, &c.; and above all, uncultivated wastes would, under its benign influence, have been converted into fields, eminently useful to humanity. In short, it would have been sown in a fruitful soil; and, in due season, it would have produced in abundance many of the blessings of life. It would have returned into the coffers of the capitalist, with more than compound interest added to the principal; it would have in some measure employed, and given fair wages to the productive classes of society; and it would have added to the internal wealth, and increased the beauty of the country. The remission of the protection which the corn laws extend equally to the property of the agriculturist and to the wages of labour, rendered necessary by the elements, has however deprived the inhabitants of the British Empire of these, under other circumstances, certain advantages; and has afforded to them a foretaste of the evils which a free foreign corn trade at all times must entail on them, should the legislature ever be pleased, in their wisdom, to withdraw from wages and from agricultural property the protection with which they are at present covered by the corn laws. Yearly, after their repeal, must the scarcity of money be increased, until every description of internal and of colonial improvement be put an end to; and then manufactures and commerce must suffer even in a higher degree than agriculture itself can do: for although whole districts, and even counties, may, and assuredly will, be thrown out of cultivation, still the fields will always produce sufficient for the support of their proprietors, of their labourers, and of the farmers; but to artizans and to commercial labourers, the result of the repeal of the corn laws must eventually be in the extreme ruinous, depriving them, as this insane action must do, of a vast proportion of the home consumption for their manufactured goods, which is by far the most valuable market for their labour, and in which nearly alone the whole of the finest qualities of their goods find abundance of buyers and customers. As society is constituted at present in the United Kingdom, it surely is preferable to pay 60s. per quarter to the British grower of wheat, than 40s. per quarter to its foreign producer; because in the one instance the 60s. remain in the empire, and must, by the laws of society, return again into the pockets of the consumers by whom that sum was originally advanced, else they must cease to consume altogether for the future; whilst, in the other case, 40s. paid for the same quantity of foreign wheat are abstracted from the national wealth, and never again come back into the possession of those by whom the foreign wheat has been consumed. The consumption of British-grown grain increases general employment, and annually adds to the wealth of the community; whilst the consumption of grain not grown within the British Empire is a certain loss of the public property, and affects the public well-being, in proportion to its extent. That, under proper legislative protection, the United Kingdom is perfectly capable of producing food in abundance for the entire population, admits of no doubt whatever. Indeed, it is not improbable that the next harvest will be of that description which may, for some years afterwards, render supplies of foreign grain unnecessary; and then the productive classes will reap the many advantages which naturally arise from abundant supplies of agricultural produce drawn from our own fields. Should the expectations now so generally entertained from the appearances in the fields at the present time be eventually confirmed, the farmers will be enabled to reduce the prices of every article without doing any injury to their property; for they will gain by quantity more than they will apparently lose in value, and the money necessary for the support of the people will be paid to our own farmers, and consequently will remain in active circulation at home, in the various channels of productive industry. Should these hopes be even only in part fulfilled this year, the demand for labour of all descriptions must be more than proportionably increased, by the great spur which the abundance of money will give to enterprise, and to many public and private improvements; and higher wages must from necessity follow. An abundant crop this season, added to the surplus remaining from the last one, must, without doing the slightest injury to any interest in the British Empire, cause a reduction in the expenses of living, and likewise cause an advance in the means of payment. This may appear to be a little paradoxical, but nevertheless it is a certain consequence of the patriotic workings of the corn laws—laws which are equally protective of the wages of labour and of those of industry, as they are of the property embarked in agricultural operations; and by no efforts of our export trade can similar benefits be created by feeding the people with foreign agricultural produce: for—as we have so repeatedly in these articles had occasion to say—there never yet has been any barter between the trades of the importers of foreign grain and the exporters of British manufactured goods; nor can any barter trade in this way be established, until foreign field-labourers, artisans, and manufacturers, be raised to a level with the same classes in the United Kingdom, or Englishmen be reduced to a level with Polish serfs and Italian organ-grinders. Reciprocity in commerce cannot exist without reciprocity in circumstances, unless by doing injury to the higher party; and certain are we that by the proposed alteration in the corn laws, the wages of labour must fall in a far greater degree than the value of living can be reduced, and general misery must ensue to the British people. To enrich Polish, German, and Russian noblemen, at the expense of the British landed interest, is certainly a notable plan for increasing productive labour amongst the British manufacturers. To say that it is absurd, is using language certainly not strong enough for its wickedness; and if persevered in, the result must be the abandonment of their native country by the most useful of her inhabitants. Afterwards it may soon and truly be said of her:—

"But times are altered; trade's unfeeling train
Usurp the land, and dispossess the swain;
Along the lawn, where scatter'd hamlets rose,
Unwieldy wealth and cumbrous pomp repose,
And every want to luxury allied,
And every pang that Folly pays to Pride.
Those gentle hours, that plenty bade to bloom,
Those calm desires, that ask'd but little room,
Those healthful sports, that graced the peaceful scene,
Liv'd in each look, and brighten'd all the green;
These, far departing, seek a kinder shore,
And rural mirth and manners are no more."

Surely to give productive employment to the hardy and intelligent sons of England, is far preferable to their transportation to foreign nations and unhealthy climates, for the cultivation of lands there in a far wilder state than any are found to be in throughout the United Kingdom. Under the influence and protection of the corn-laws, and under the security which their *fixity* must give to capital and talent embarked in the cultivation and improvement of the soil at home, abundance of food may be annually grown for the support of double our present population, and trade must increase with the prosperity of agriculture at home in an equal degree, spreading universal happiness throughout the empire. Six millions of acres of land at present produce wheat sufficient for the annual wheat consumption of the inhabitants of the United Kingdom. As the science of tillage progresses, however, the fifty millions of acres of land now under cultivation will, under the influence of the corn-laws, be brought forward into the highest state of productiveness; and we have still another twenty millions of acres now in a state of nature, and totally unproductive, of which the greatest part may also be forced to yield to the efforts of man, and rendered useful to all the purposes of humanity. With such an extensive field for productive labour in the two islands at home, and with such beneficent means for rendering the entire population contented, prosperous, and happy, for many ages yet to come, however great its increase may be during future generations; it appears actually to be an act of public insanity to venture, by the repeal of the protective laws now existing in all the departments of our industry, to destroy a system of practical prosperity, and to substitute for it one of theory: in fact, to change the existing manners and customs of the British Empire, into those of Utopea, *the region of fancy*, and to sacrifice many important and sure advantages, now in the possession of the British people, to ideal and unsubstantial improvements, which have no foundation, unless it be in the fancies of those by whom they are propounded. Should the present corn season, however, continue to be as propitious to its conclusion as it has hitherto been, the commercial interest generally, and the manufacturers in particular, will soon afterwards experience the numerous advantages which a plentiful supply of all the necessaries of life, when produced at home, universally confers on all their labourers and artisans. The capital necessary for the payment of the food of the people will be paid to its British and Irish growers, and by them it will be put into circulation amongst all the industrious classes of society, thereby increasing the quantity of labour, and adding to wages commensurate to that increase. Should, however, the crops now in the fields have an unfavourable result, or should a free foreign trade in corn be established at all times and under all circumstances, millions sterling in hard money will be speedily abstracted from our at present by far too limited money circulation. The price of the loaf, undoubtedly, will become "small by degrees, and beautifully less," but so likewise will the wages of labour. This system may for a short period serve the purposes of some of the cotton lords—it may increase, at the expence of the manufacturing and agricultural workmen, the number of those who are at present entitled to add to their names the valuable degree of L. S. D. It may for a while enable them to compete with foreign manufacturers, in proportion to the extent to which circumstances may reduce the people of the United Kingdom to a level in condition with those on the European continent. To degrade our population—to place them in the same rank in life in which the slaves of Poland and boors of Germany walk—cannot, however, either increase the nation's wealth, nor add to her moral greatness; it will increase vastly the mass of human wretchedness, and render doubly necessary the transportation to foreign and pestilential climates of the best portion *by far* of the British people. In the mean time, however, a beneficent Providence has given us the prospect of another most abundant crop of all the necessaries, and of many of the luxuries of life. In the beginning of last month, the young wheats received a most seasonable check by cold easterly winds, unattended by frost; for previously they were perhaps too luxuriant, and were in some danger of running too much into straw. The weather, however, has corrected this apparent faultiness, and in no previous season in the memory of man was there a prospect, at this time of the year, of a better wheat crop than the coming one promises to be. The act of man alone under such circumstances, may change this prospect of an abundant crop into a source of wretchedness and poverty to the great bulk of the people. The agricultural interest has, however, done its duty in the fields, and its labour has been largely assisted by the propitious state of the weather, in as far as the season has yet progressed. It is to be hoped, therefore, that the legislature will protect these prospects by continuing to them the protective influence of the corn-law.

Since our last publication, the barley trade has continued in a state of much depression; and, had the supplies amounted to even the usual quantities at this season of the year, the decline in prices would have been much more considerable than we are in our present number compelled to quote it. The heavy manner, however, in which our rulers have been pleased to tax the barley crop for many years which have now passed, has been attended by its natural consequence. The growth of this most valuable article of agricultural produce yearly now is more and more restricted—taking into consideration the annually-increasing population—and this remark applies, in a more particular degree, to that of last season. No great quantity at the present moment, therefore, remains in the farmers' possession, and the deliveries consequently have latterly been nearly as limited as the demand. The maltsters several weeks ago concluded their operations; and the encouragement given to smuggling, by the enormous duty charged on home-made spirits, having rendered the distilling trade anything but a brilliant one for some years back, this channel for the consumption of barley is regularly becoming more restricted; and should the legislature not take the subject of these heavy excise charges speedily into consideration, smuggling must continue to increase, and distilling at home to decay, until the greater part of the consumption of spirits throughout the United Kingdom be supplied by foreign distillers, and the spirits themselves be extracted from grain of foreign growth. It is not of the actual amount of duty levied on British spirits—although it exceeds seven millions sterling annually—that the public have a just cause of complaint, but of the manner per gallon in which it is imposed. If the duty per gallon in England were reduced to 5s., the same amount at least would be annually paid into the treasury, and smuggling would be entirely suppressed. An additional quantity of barley, to the extent of at least half a million of quarters, would be annually used by our distillers at home, and one million sterling would be saved to the country annually out of the present expenses of the coast-guard service. The distilleries at home would speedily again assume a healthy state, and the production of the barley fields would be increased in proportion to the increase of the demand in this channel for its consumption. An additional impulse might likewise be given to the barley grower's industry, by a trifling alteration in the existing laws, by which the operations of the rectifiers of British neutral spirits are at present confined. We can see no reason why foreign and colonial spirits and Scotch and Irish whiskey are permitted to be sent into consumption at any strength which may suit the interest of their proprietors and the palates of their consumers, whilst British rectified spirits cannot by law be sold, unless they be reduced to seventeen or eighteen under-proof—until, in fact, they be converted into the common strength of Irish punch. Under regulations so exceedingly unmeaning, the English rectifiers are prevented from producing those fine qualities which, under a more liberal system, they are undoubtedly perfectly qualified to do; and in this cause alone may some portion, at all events, of the present demand for smuggled spirits have its origin. But a relaxation in the present restrictions imposed on the rectifiers would likewise be attended by another advantage, in as far as it would render home-made spirits equal in flavour, and superior in healthfulness, to any made in foreign nations. This fact is perfectly established already, by the wonderful progress which the rectifiers, even under a most disadvantageous system, are now making in the production of British brandies. At the large distillery for this spirit in King-street, Snow-hill, Mr. Stokes and Mr. Dunlop are rectifying neutral spirits, the genuine extract of

British and Irish barleys, into brandy—certainly not inferior in flavour to the largest portion of the duty-paid brandy imported at present from France, and in wholesomeness far superior to any description of brandy extracted from wine lees and inferior fruit. A reduction in the rates of duty now charged on spirits manufactured in England, and an alteration in the existing regulations for the rectifiers, by rendering the nefarious trade of the smuggler unprofitable, and consequently by destroying it, would eventually establish the great virtue of temperance on a sure and solid foundation. This virtue has drunkenness on its right hand, and tee-totalism on its left—two vices equally injurious to their followers and patrons, for they are equally destructive to the health of the body and the peace of the mind; and to exterminate them both would wonderfully improve public morality. They have their origin alone in the crime of smuggling, and their removal can be easily effected by the removal of the foundation on which they at present are elevated. But if the existing system for the regulation of distilling and rectifying, and the heavy duty now imposed on spirits manufactured in England, be injurious to the barley grower, the excessive duty imposed on barley when converted into malt is doubly so: for it deprives the farmer of a barley market for double the quantity at present consumed by the public brewers; and it likewise limits the consumption of beer itself to perhaps one-third of the quantity which, under more liberal principles, the population would most certainly require. The consumption of malt by the public brewers annually is at present reduced to about four millions of quarters; and, to divide the beer to be extracted from this small quantity of malt amongst our population of thirty millions of human beings, is certainly placing the great majority on something less than short allowance itself. The fact is, one-half of the people cannot afford to consume beer at all, rendered so dear by the heavy duty at present imposed on malt; and the reduction of it from its present high rate to one of 1s. per bushel, would do more than triple the existing consumption of malt; and this extraordinary increase in the consumption of barley would render necessary tillage of a farther quantity of sandy soils, to the extent of from one and a half to two millions of acres. The profits which would arise from this additional cultivation of land would not only most abundantly pay for the expense of the increased consumption of malt and beer, but would also add to the annual incomes of farmers and land proprietors, and would likewise proportionably increase the consumption of manufactured goods. It would produce a general benefit, and could not, by any possibility, injure one solitary interest within the British Empire, unless it be that of the beer adulterator; who cannot afford to sell it at those prices which a great proportion of his customers can alone afford to pay, and thus the needy labourer is not only deprived of that quantity of beer which is necessary to his support, but he is also defrauded in its quality, and his health is put at hazard by its use. Whilst so much has been written and spoken by the anti-corn-law leaguers respecting the poor man's loaf, it is rather surprising that they make no complaints respecting the poor man's beer. They recommend the importation of foreign grain, by which the poor man would be deprived of the productive labour arising from his consumption of foreign food; but not one word do they say respecting doubling the quantity of barley grown at home, by which the poor man would obtain double the quantity of beer now consumed by him, and by which the work of the barley field labourers would be doubled, and so likewise would be the amount of wages paid for cultivating this far too highly taxed article. The proposed reduction of the duty now payable on foreign spirits, on the contrary, must injure the revenue to the extent of the reduction; for even were the duties fixed at 12s. per gallon, still this rate would be as prohibitory, as in the present one, none but the rich having the means to afford its payment. But to reduce the duties on any article of British produce, such as barley is, would, from necessity, increase consumption in a much greater ratio than if the tax on it was remitted, and would materially improve the revenue; in short the consumption of articles of our home growth adds to the national wealth, whilst the consumption of any article grown abroad, which may be easily produced at home, substracts from the riches of the community, and deprives the industrious classes of that labour which is their undoubted property, and to which they have the strongest national claim, because it is their birth-right. In the meantime, however, for the quantity sown this season, we have the prospect of an abundant barley crop. The fields have a most luxuriant appearance, and promise well at the present moment. The Ministers have only to extend, by the obvious means within their power, the channel for its consumption, and the farmers will produce plenty of it.

During the month of June, all the large markets of consumption were very abundantly supplied with oats; and although there was no falling away in the usual demand at this season of the year, still a depreciation in their value, to the extent of 1s. per qr., must be quoted as having occurred since our last publication. As the prices of this article were moderate enough previously, though still leaving a fair remuneration to the oat farmer—this farther decline in their value can only be attributed to the ministerial declaration of their intention to alter the existing system of giving a fair protection to all departments of internal industry, and more particularly to that of the agricultural interest. For many years now, the production of oats in Great Britain has not been equal to the annually increasing consumption; and this circumstance has, under the protective influence of the corn-laws, been of immense advantage to the inhabitants of the sister island. In that department of the British Empire, the spur which the state of the English corn markets generally has given to agricultural improvement has already produced wonderful effects on the condition of the entire population, and the progress making in the still further conversion of land from pasturage into cropping, is rapid, beyond any thing previously known there in farming pursuits. The value of oats has remained very moderate in Great Britain, in consequence of Irish agricultural improvements; and it only requires that legal protection be continued to property and talent embarked in similar undertakings for a few years longer, to render the produce of all descriptions of grain and pulse there fully as valuable to the British Empire as the oat crop has been this season. One great advantage of Great Britain being supplied with oats from Ireland, instead of from the North of Europe, is the retention of the money paid for them within the United Kingdom. The circulation is not for one moment rendered less, by this transfer of money from one British subject to another; but it is employed | in some manner or other for the public benefit, adding to the stock of labour, and increasing the rates of wages payable to the working classes. To the shipping interest likewise the increased coasting trade, caused by agricultural improvements in Ireland, is of much importance; for the proposed transfer of the supply of the east coast of Great Britain with oats, from Ireland to the north of Europe, must be attended by the transfer of their carriage from the British to a foreign flag. At the proposed fixed duty on oats, the rates of freights from Bremen, Emden, and all the other oat shipping ports in the north of Europe, will be a half less than those now paid betwixt the west coast of Ireland and London, and likewise very considerably lower than British shipping can afford to carry oats even betwixt Banff and London. The productive labour in growing oats, and all the other charges on the importation of them into the British empire, must be paid away to foreign land proprietors, and to foreign ship-owners; for the proposed rate of duty will be scarcely equal to the difference in freight, and will be no protection whatever to British and Irish agriculture. It will deprive many industrious British families of their daily bread; it will reduce still lower the wages of agricultural labourers; it will tend materially to limit the home consumption of manufactured goods; and it will render the transportation of thousands of families to foreign states doubly necessary. Under the proposed alterations in the corn laws, emigration to the colonies must annually be on the increase, and a long farewell may be given to any further internal improvement within the United Kingdom; whilst, under the fostering influence of the corn laws, no limit can be placed to the important and numberless benefits which they must annually bestow on every class of her Majesty's subjects, whether they reap their incomes from national annuities, from agriculture, from commerce, or from shipping.

The information received from the large corn exportation markets, within and without the Baltic, since our last publication, is in due course of post, and is not in any manner interesting to those engaged in the foreign corn trade in this country. The land proprietors in general, throughout all the corn districts, were pleased almost beyond measure at the prospects of an increased sale for their agricultural produce, which late events in the United Kingdom seemed to promise them, though, at the same time, they did not well comprehend the policy by which British agriculture was to suffer for their advantage. That the increased quantity of grain, which the repeal of the corn laws here would enable them to send into this country, could not by any possibility increase either the value or the quantity of British manufactured goods now imported into their rivers and harbours, past experience has sufficiently established; but the landlords generally were anticipating an increased consumption amongst their own *order* of Italian silks and French wines, to be paid for with the money which they would receive from the British empire in exchange for their agricultural products of every description. The prospects however were considered, by the more cautious portion of them, to be too brilliant to be substantial; and they waited future events before they could absolutely place their reliance on changes so exclusively favourable to themselves, and so perfectly destructive to the best interests of those by whom these favours were expected to be bestowed. In the mean time, the corn trade continued to be regulated by the information received from Mark Lane; and as prices had declined more in proportion than they did during the previous four weeks in the English markets, the demand abroad generally was without any animation, and the operations in wheat were even more uninteresting than they had been in a more early period of the season, when a good deal of business had been done with a view to the British markets, and under a conviction that a considerable reduction in the then existing rates of import duty would take place before any wheat of the present crop could be brought forward into our consumption. Under former circumstances, this expectation had, at all events, a probable foundation; but, under existing circumstances, this prospect cannot be so confidently calculated on. Indeed, until the great question of the British corn laws be finally settled, the corn trade throughout Europe must continue in a disarranged and uncertain state, and our land proprietors and farmers must remain in perfect ignorance of the value of their property, and of the manner in which it must for the future be cultivated to render it productive to the community at large.

From the ports in the Mediterranean and in the Black Seas, the advices received since our last review of the state and prospects of the corn trade, are unusually unimportant. A stagnation in the corn trade generally prevailed in all the corn markets in those seas, occasioned there by the brilliant prospects here of another abundant wheat crop. Prices were consequently entirely nominal, the supplies being in most places larger than the home consumption required. Of course the proposed repeal of our corn laws was not then even anticipated in that portion of the globe; but when the late parliamentary and ministerial proceedings on this subject are made known there, a very material impression must be made by them on the value of all descriptions of agricultural produce. The supplies which, under the repeal of agricultural protection here, we must receive from thence, will likewise tend to reduce the price of bread, and in a more material degree to reduce the wages of those who are the great consumers.

From New York, letters have been received, dated in the second week of last month; but, in as far as the grain markets are interested, they communicate no intelligence whatever of the smallest consequence. Our transatlantic brethren had little money, and still less credit at that period; and speculation in flour did not exist beyond the demand for it, which the want of money had occasioned by merchants desirous of making remittances to Europe. For this purpose a considerable quantity of flour has been already forwarded to Great Britain, and more would still follow; the reports of the coming wheat crop throughout the union being at the latest dates of a favourable description, and a large quantity of the previous crop remaining unconsumed.

CURRENCY PER IMP. MEASURE.

JUNE 28.

	Per Qr.			Per Qr.	
WHEAT, Essex and Kent, red 64	65	67	White..	65	68
Irish	54	56	Do.	58	60
Old, red	64	66	Do.	68	70
RYE, old	34	36	New....	36	38
BARLEY, Grinding 28 30 Malting	—	34	Chevalier	—	36
Irish....................	27	28	Bere ...	24	25
MALT, Suffolk and Norfolk	54	56	Brown..	48	50
Kingston and Ware	58	60	Chevalier	58	60
OATS, Yorksh. & Lincolnsh., feed	24	26	Potato ..	26	27
Youghall and Cork black	21	22	Cork, white	22	23
Dublin 20	21	22	Westport	23	24
Waterford, white	19	22	Black ..	21	22
Newry	24	—			
Galway	15	17			
Scotch feed	25	26	Potato 26	27	28
Clonmel	21	22	Limerick 21	23	24
Londonderry	22	23	Sligo ..	21	23

	Per Qr.			Per Qr.
BEANS, Tick, new	36 38	Old	—	—
PEAS, Grey	36 38	Maple	36	38
White	35 36	Boilers	38	40

SEED, Rape...... 36*l.* 40*l.* Irish..32*l.* 34*l.* per last.
Linseed........ 48 56
English Red Clover, fine, 60 70 per cwt.
White........ 56 64
Mustard, White 16 — brown 18 19 per bush.
Tares, old 36 40
FLOUR, Town-made 58 — Suffolk 46 pr sk. of 280 lbs
Stockton and Norfolk, 45 47

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	42	44	48			
Hamburg	40	42	44			
BARLEY		18	21			
OATS, Brew	19	22	24	Feed	14	16
BEANS		20	22			
PEAS		26	—			
FLOUR, American, per brl		23	—	Baltic	22	—

IMPERIAL AVERAGES.

Week ending	Wheat.	Barley.	Oats.	Rye.	Beans.	Peas.
May 14th	62 5	31 2	22 7	34 8	38 5	37 9
21st	61 6	30 9	22 8	35 3	38 2	37 5
28th	61 6	30 9	22 4	35 7	38 4	38 0
June 4th	62 4	29 7	22 4	35 4	38 2	38 2
11th	62 2	30 2	22 2	32 9	37 4	39 2
18th	62 5	30 10	21 10	36 10	38 7	38 3
Aggregate Average of the six weeks which regulates the duty	62 1	30 6	22 4	35 1	38 2	38 1
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	24 8	16 10	13 9	16 9	12 6	12 6
Do. on grain from British possessions out of Europe	5 0	0 6	2 0	3 0	0 6	0 6

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, June 25th, 1841.	s. d.	AVERAGES from the correst ponding Gazette in the last year, Friday, June 19th, 1840.	s. d.
WHEAT	62 5	WHEAT	67 4
BARLEY	30 10	BARLEY	35 10
OATS	21 10	OATS	28 4
RYE	36 10	RYE	36 8
BEANS	38 7	BEANS	45 8
PEAS	38 3	PEAS	43 1

Account shewing the Quantities of Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 5th June, 1841; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.		Quantity entered for consumption.		Quantity remaining in warehouse.	
	qrs.	bush.	qrs.	bush.	qrs.	bush.
Wheat, from British Possessions	....		150	0	4966	0
Peas, from do.	....		....		....	
Indian Corn, do.	....		....		....	
Wheat, foreign	328659	1	116030	5	332960	1
Barley, do.	6297	5	1378	1	16258	5
Oats, do.	15578	0	1	6	28147	5
Rye, do.	....		20	0	2972	7
Peas, do.	19861	0	4650	7	29180	3
Beans, do.	36768	7	19858	1	29803	4
Indian Corn, do.	419	5	1	1	2701	0
Buck Wheat, do.	....		....		....	
	cwts.	qrs. lbs.	cwts.	qrs. lbs.	cwts.	qrs. lbs.
Flour, from British Possessions	6849	1 23	18165	3 15	63019	2 11
Flour, foreign	93123	2 15	6859	0 26	210728	3 26

PRICES OF HOPS.

BOROUGH, June 28.

The accounts from the plantations are very favourable, and the market has, in consequence, become rather heavy. The duty is backed at 160,000*l.*, and is still looking up.

	East Kent.	Mid. Kent.	Weald of Kent.	Sussex.	Farnham.
	s. s.	s. s.	s. s.	s. s.	s.
Bags, 1836	45 to 65	45 to 65	45 to 56	— to —	—
Pocks. 1836	45 .. 75	45 .. 75	45 .. 65	45 .. 63	—
Bags 1837	none	none	none	none	—
Pocks. 1837	—	—	—	—	—
Bags 1838	80 .. 105	80 .. 105	75 .. 85	—	—
Pocks. 1838	85 .. 105	85 .. 105	80 .. 100	—	—
Bags 1839	110 .. 150	110 .. 150	—	—	—
Pocks. 1839	140 .. 180	140 .. 180	110 . 150	105 .. 130	240, 300
Bags 1840	140 .. 300	135 .. 290	—	—	—
Pocks. 1840	140 .. 320	140 .. 320	115 .. 190	110 .. 170	290, 355 to 450

POTATO MARKET.

SOUTHWARK, WATERSIDE, JUNE 28.

Present prices per ton.

Devons	70s. to 75s.	per ton.
Scotch Red	60s. to 70s.	,,
Guernsey Blues	55s. to 60s.	,,
Kent and Essex Whites	60s. to 65s.	,,
York Reds (from Stores)	25s. to 30s.	,,

WOOL MARKETS.

BRITISH.

JUNE 28.

	s. d.		s. d.
Down Teggs	1 0	to	1 1
Half-bred Hogs	1 0		1 0½
Ewes and Wethers	0 9		0 10
Flannel do.	0 9		1 1
Blanket Wool	0 5		0 8
Skin, Combing	0 11		1 0½

LIVERPOOL, JUNE 26.

SCOTCH WOOL.—There still continues a good enquiry in 'our market for foreign and Scotch Wool, and the feeling in the trade is better, yet few sales have been made, and we can quote no alteration in price.

	s. d.		s. d.
Laid Highland Wool, per 24 lbs.	8 6	to	9 3
White do. do.	00 0		00 0
Laid Crossed do..unwashed	9 0		10 0
Do. washed do.	10 0		11 0
Do. Cheviot unwashed do.	9 3		11 0
Do. washed	14 0		16 0
Cheviot white, washed	19 0		21 0

IMPORTS FOR THE WEEK.

FOREIGN.		SCOTCH.	
Import for the week	1040	Import for the week	108
Previously this year	41239	Previously this year	2479
	42279		2587

PRICES OF MANURES.

JUNE 28.

Bone-dust, 21s. 6d. per qr. of 8 bushels
Half-inch ditto, 21s. per qr. do.
Rape-dust, 7*l.* 0s. per ton.
Rags, 4*l.* to 4*l.* 10s. per ton.
Graves, 5*l.* to 5*l.* 10s. per ton.
Gypsum, 38s. per ton.
Salt, 2*l.* 5s. dirty, 2*l.* 15s. clean, per ton.
Lance's Carbon, 12s. 0d. per qr.
,, Humus, 14s. 0d. ,,
Soap ashes, 10s. per ton.
Artificial Manure, 12s. per qr.
Poittevin's Patent Disinfected Manure, 13s. 6d. per qr.
Nitrate of Soda, 22s. 0d. to 23s. 0d. per cwt.
Nitrate of Potash or Saltpetre, 25s. 0d. to 30s. 6d. per cwt.
Willey Dust, 4*l.* 4s. per ton.
The Urate of the London Manure Company. 5*l.* 5s. per ton.
Alexander's Chie-fou, or Chinese Manure, 21s. per cwt.

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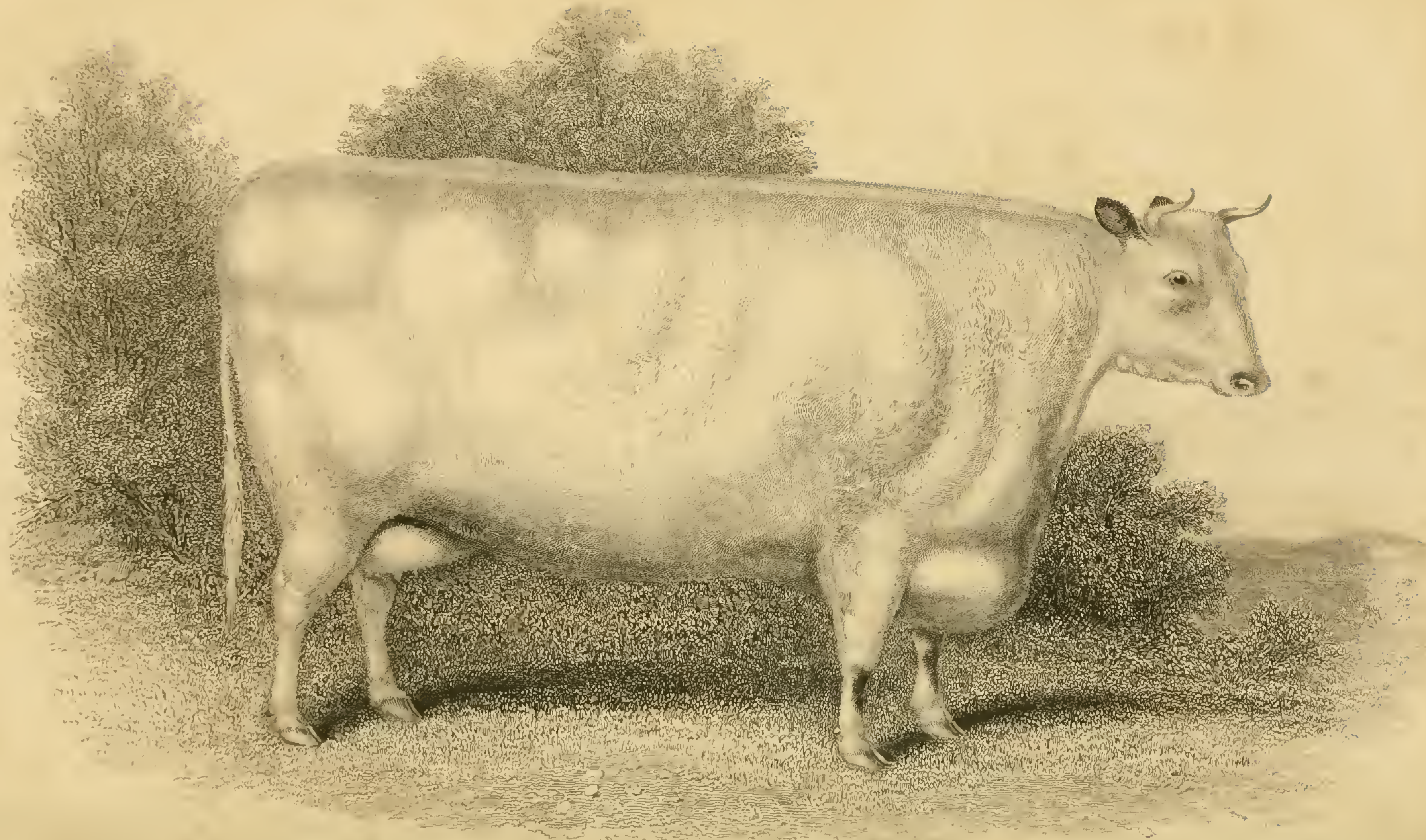

A Short Horned Cow

[illegible] Northallerton [illegible] at Oxford 1839 [illegible]

London Published by [illegible]

THE FARMER'S MAGAZINE.

AUGUST, 1841.

No. 2.—Vol. IV.] [Second Series.

PLATE I.

The subject of the first Plate is a Short-horned Cow, the property of Mr. T. Bates, of Kirkleavington, Yorkshire, which obtained the first Prize of Twenty Sovereigns, in Class I., as the best Cow in Milk, at the Royal Agricultural Society's Shew, at Oxford, in 1839; and a Prize of Twenty Sovereigns, in Class V., as the best Cow of any age, in Calf or Milk, at the Yorkshire Agricultural Society's Meeting at Northallerton, in 1840.

PLATE II.

CORONATION; Winner of the Derby for 1841.

(For Description, see page 92.)

LIEBIG'S ORGANIC CHEMISTRY.

BY J. TOWERS.

No. II.

We resume our subject at the point where we quitted it—the quotation from the *Penny Cyclopædia* upon the qualities of *humus*. From the paragraph which comprises the spirit of the article, namely, that it (humus) "is the result of slow decomposition of organic matter in the earth, and is found in the greatest abundance in rich garden mould, or old neglected dunghills,"—we obtain all the proof we require, that the humus of agriculture is neither more nor less than decayed, *blackened manure*, provided it be produced in the dung-mixen; or *vegetable mould*, if it result from masses of leaves, weeds, or other herbaceous matter, without any animal excrement. This definition will suffice to remove mystery from its origin, and will separate it from the humus of the laboratory, which is procured by direct chemical agency. Sir Humphrey Davy observed, nearly 30 years ago, that—"In most of the black and brown rich vegetable moulds, the earths seem in combination with a *peculiar extractive matter*, afforded during the decomposition of vegetables; this is slowly taken up, or attracted from the earths by water, and appears to constitute a prime cause of the fertility of the soil."

In this passage we trace the first definite account of what has become our *humus;* and as nothing has been added to its qualities, we may take Davy's description as our interpreter; and lay it down as a principle in agriculture that humine, humic acid, or humus, is a product of that peculiar action which soil exerts upon vegetable and animal remains, that have previously undergone a slow process of fermentation (termed by Liebig, eremacausis) in masses. Thus the earth perfects what has been oserated partially in the dunghill, and a certain substance is the result which assuredly performs an important *rôle* in the phenomena of vegetable growth.

It is at this point that Liebig steps in, and lays down that first great law which is the chief object of doubt and dispute; but before we allude to it, it will be remarked that Davy fostered the opinion of the absorption of manuring substances dissolved in water, in which opinion he has been followed by almost every writer on vegetable nutrition. But he had observed that "the pores in the fibres of the roots of plants are so small, that it is with difficulty they can be discovered by the microscope; it is not therefore probable that solid substances can pass into them from the soil." See Lect. VI. of *Agricultural Chemistry*, where we further read —"I tried an experiment on this subject: some impalpable, powdered charcoal, procured by washing gunpowder and dissipating the sulphur by heat, was placed in a phial containing pure water, in which a plant of peppermint was growing: the roots of the plant were pretty generally in contact with the charcoal. The experiment was made in the beginning of May 1805: the growth of the plant was very vigorous during a fortnight, when it was taken out of the phial; the roots were cut through in different parts, but no carbonaceous matter could be discovered in them, nor were the slightest fibrils blackened by the charcoal, though this must have been the case had the charcoal been absorbed in a solid form.

"No substance is more necessary to plants than carbonaceous matter; and if this cannot be introduced into the organs of plants except in a *state of solution*, there is every reason to suppose that other substances less essential will be in the same case."

Having thus given our critic every advantage deducible from so high an authority, we will recur to the more refined theory of Liebig, as criticised by him.

The leading position of our author, and the one which is viewed as the first fundamental error, is found in the following lines:—"It becomes evident from the most conclusive proofs, that *humus*, in the form in which it exists in the soil, does not yield the smallest nourishment to plants."

This, we admit, is a startling invasion of the old received theory, "that plants derive all their nutriment from soluble matters taken up by their roots;" and it certainly appears contradictory to the known fact, that water is essential to vegetation, that all plants flag, and are more or less stunted in their growth, during seasons of extreme aridity; and that manures, duly applied, promote luxuriance and increase of crop.

We will not now, however, inquire into the theory of nutrition abstractedly, but restrict our remarks to the proofs adduced by Liebig, and the manner in which they are assailed. First then—"The known properties of *humic acid* are such that cannot be absorbed by the roots of plants in sufficient quantity to yield the necessary supply of carbon."

2nd. Carbon is removed from soil every year with every crop, and yet soil becomes progressively *richer* in this element.

3d. Soil treated with water does not yield to that fluid *one hundred thousandth* part of its weight of soluble organic matter.

4th. But alkalies, and alkaline earths, such as potash, soda, and lime, render humus or humic acid to a certain extent soluble in water; yet, as the alkalies, &c., found in the ashes of plants are too small in quantity to account for the bulk of carbon which enters into the vegetable organization, it is impossible to suppose that that bulk has been taken up from the soil by the solvent power of the minute quantity of alkali which is traceable in the ashes upon the humus contained in the ground.

The critic admits the apparent power of the proofs, but denies their validity; and in order to overthrow the 1st and 4th positions, adduces a tissue of fractional calculations, too lengthy and refined for our pages, and after all, but hypothetical. One, however, is so curious that we must, diffuse as it is, present it to the consideration of our arithmetical readers. The writer takes for his subject a crop of wheat between the period of flowering and harvest, calculated at its full produce per imperial acre, or at 24 bushels of grain, weighing 1512lbs., of which 650lbs. are *carbon*, and 2000 of straw, of which 760lbs. are carbon; and he proceeds thus:—"For the sake of calculation, we will suppose six weeks, or forty-two days, to elapse between the flowering of the plant and its becoming ready for the sickle. During this period, the crop in each imperial acre has obtained about 500lbs. of carbon (a portion of the carbon of the seed having been previously contained in the fluids of the plant). Now, this quantity corresponds to 877$\frac{1}{5}$lbs. of humic acid in forty-two days. If we suppose that not one root or fibre has descended more than eight inches below the surface, we shall find by calculation, that the soil in contact with the roots of the wheat crop will weigh 1884 tons, or 4,596,960lbs., so that the humic acid yielded by the soil in forty-two days equals about $\frac{1}{5421}$ of the weight of the soil, supposing that none were produced subsequent to the commencement of the forty-two days. In the ordinary method of extracting soluble matter from the soil, namely, by agitating a small quantity of soil with a considerable quantity of water, the water will be to the soil, on an average at least, as 10 to 1; so that if the soil contained at one period as much humic acid as would be sufficient to yield *all* the carbon required by a good crop of wheat grain, still, when agitated with ten times its weight of water, that fluid would dissolve only 52,410th part of its weight of organic matter. But this is the whole quantity yielded by the soil in six weeks; if, however, which is *most probably the case*, the soil does not contain at any one period more humic acid than may be consumed in ten days or a fortnight, then, when agitated with ten times its weight of water, that fluid would dissolve less than 100,000th part of its weight of organic matter." "This calculation must at once prove the fallacy of M. Liebig's conclusion."

Really, when we perceive a grand suggestion attacked by a mere probability, we must join in the lament of our German author, and admit that it appears to be the chief object of man to search for flaws and fallacy in the propositions of others, rather than to cherish and foster them as so many steps taken in the search after truth; and after all, what is the object of the foregoing calculation, profound as it may be? Admitting that humus contains 6-10th parts of carbon, and imparts them to a growing crop of wheat, has the critic done anything more than offer another suggestion in favour of the old hypothesis, that *plants derive their nutriment chiefly from the soil?* We will not, however, stop here—for, although it may be true that water could, during six weeks, take up a sufficient quantity of humus to supply all the carbon which is found in a crop of corn at the time of harvest; is this simple, bald fact powerful enough to give the negative to one of far greater importance—one, in a word, which includes the security of the whole human race? *If plants obtain the bulk of their carbon from the ground*, where can we find any other agents capable to attract and decompose the volume of carbonic acid which exists in the atmosphere, and is poured into it without intermission from every mass of fermenting materials, and from the organs of respiration of every creature that is endowed with breathing life? Antagonism prevails throughout nature: and we are far from affirming that creative wisdom has not provided a decomposing agent in the air itself, competent to act as an antidote to the deadly poison of carbonic acid; but still, as plants possess breathing pores ('*stomates*,') discernible by the microscope, we are willing to believe that they *inspire*, as well as expire; and that, by their simple act of inhalation, they remove from the air carbonic acid in sufficient quantity for the processes of assimilation, and the consequent formation of woody fibre, leaving the atmosphere in a condition wherein a healthy balance is generally preserved, although that balance may be occasionally disturbed by causes which operate contagions and epidemics. When we perceive facts and phenomena which are paramount, and involve the security of man, and of the entire animal creation, it becomes peurile to quibble for mere trifles. We will admit the necessity that exists for the application of manuring substances to the land; we will assert with the stoutest, that the more generous and liberal the economy of the farm, the greater and better will be the return; but we conceive that when it becomes a question by what tubes, or in what direction, the plant conveys the carbonic acid into its organism, and perceive an apparatus like that of the foliage, adapted in every way to inhale, as its appropriate aliment, that aerial gas which is vital to *it*, though deadly to animals, we hesitate not, but boldly dispute the theory which is built upon a chemico-arithmetic calculation, and grasp, as real, *that* which is equally consistent with philosophy, benignity, and security.

Another almost conclusive circumstance may be noticed. All the substances employed as manures contain the elements of water, and during the processes of decomposition in the soil these elements are developed. Water, therefore, is produced, and charcoal (carbon) deposited. Now Liebig contends that the woody fibre of the vegetable does not derive its carbon from the soil, but he nowhere asserts that water is not absorbed. *Sap*, as far as we can detect it in its crude state, is colourless and insipid. The fluids which can be collected by incisions made in the stem, are compound, and not primary sap; they contain a certain proportion of the proper or laborated juices of the vegetable, and therefore afford no criterion by which we can determine the nature of the sap introduced by the roots: but solutions of manure are brown; and who, we enquire, ever saw a trace of brown fluid in the stem of a pale balsam—a plant which is not only semi-transparent, but one which takes up a great volume of water, and luxuriates in a soil imbued with manure?

All soil acquires more or less colour by being under crop; take for example, the simplest, purest loam. Let a plant which will live in such soil, be placed in a garden pot, and be sufficiently supplied with rain-water only. In six months time what will be the result? The plant will have gained in bulk and weight; yet whence could it have derived its carbon, certainly not from the water, and but little, if any, from the silex, alumine, chalk, and iron, which constitute the loam.

Thus, therefore, facts furnish us with antagonist arguments, and so far we must hesitate to decide; but when we come to sift the other positions of our learned German chemist, we perhaps shall collect evidence which will further tend to weaken an assumed position, which has for its basis an arithmetical calculation. At the same time we cannot go altogether with Liebig; he is so purely the chemist—he builds so entirely upon analytic and synthetic deductions, that he appears to lose sight of the great natural agents.

We will hereafter endeavour to trace their operations in the phenomena of vegetation, and thus hope to reconcile conflicting opinions, and prove to what extent chemistry may, legitimately, be rendered available to agriculture.

ON PLOUGHING IN GREEN CROPS — MANAGEMENT OF CLAY LANDS.

Sir,—In the magazine of July 1840, I stated some observations on the cultivation of poor clay lands, which were noticed in the October number by "A poor Clay Land Farmer," and afterwards in the magazine of February last by Mr. Kilby. The first mentioned writer asks two questions: a substitute for turnips in reducing the straw into manure, and the propriety of ploughing leguminous crops into the land in place of a fallowing. On the first point, few farms are found without some portion of land suitable for green crops; where they do exist, great difficulty prevails, and I know of no resource save oil-cake and similar substances and esculents, where they can be bought at a remunerative price. Much assistance may be derived from proper yards for cattle, but the quality of the dung must be inferior, and the quantity much less. With respect to ploughing leguminous crops into the land as a manure, I have ever been of opinion that such a system would soon prove ruinous on poor clays; the crops themselves cannot be obtained; a proper tilth and working of the land will be wanting; and experience has shown that on such lands no substitute yet known, can take the place of a thorough fallowing process. Even on the best clays this result has occurred; and where the quality of the soil produced heavy leguminous crops, the system delayed, but cannot supersede the fallowing of the land. Few farmers can afford to drain such lands, and the owners are too often unwilling, and also unable. But, I have no expectation that complete draining will alter the system of working and cropping of clay lands; easier and more convenient modes of operation will be obtained, but a convertion into green crop lands may not be possible. The writer speaks very judiciously, and seems an experienced man on the poor clay soils I had mentioned.

Mr. Kilby's observations are more lengthened, and require more examination. In the first place, he seems wholly ignorant of the soils I had mentioned, and this error renders the subsequent remarks and directions of very little value, as the land he cultivates must be loamy and of a very different nature. Draining is very properly recommended, but I can say from experience, that such lands are not rendered more suitable for green crops by draining, and levelling would also be required before that process was performed. The levelling of such lands is a perplexing process, and much damage has ensued where it has been rashly and injudiciously attempted. Furrow draining would keep the land in that awkward form; for if it was subsequently levelled, and the furrows altered, the drains would be rendered useless. Drilling by machinery is inpracticable—the ridges are high and crooked and unequal in breadth; sometimes eight yards at one end, and two at the other, and often terminating in a narrow point in the middle of the field. No machine can work lengthwise, and in going across the declivity and acclivity elevates and sinks the implement beyond all possibility of management. And besides, the climate has a great influence; a wet season lays aside machinery even on loamy clays after Swedes and beet have been removed, and on poor clay fallows the seed is often sown with water running in every furrow, and with the barrows attached to a large tree to prevent the treading by the horses' feet; and the profit of drilling of grain crops yet wants confirmation; time is precious in such seasons, and on lands where a drill machine would not work for one half hour. Poor clays will not produce tares to feed sheep in April or May, or rather, no crop of that plant worth the name; in such cases, an abundance of weeds will grow, and if a crop of winter tares was obtained, such lands from the wetness would not allow sheep to lie upon them. Double power will be required to plough clays in May, and in all cases these later fallowings are very imperfect. On such soils, barley and oats have been found one-third inferior in value to wheat, scanty as the crops may be under the best management that has been yet bestowed. In the spring, equal difficulty would occur in the use of the drill; and during summer, neither hand nor horse-hoes would have any effect whatever on the hard surface. And if the fallows be all sown with oats and barley, much work would fall to be performed in the spring months; but as no rotation is mentioned by Mr. Kilby, this point is uncertain.

Many agricultural writers and farmers have supposed that any soils may be ploughed by two horses, and may be cultivated by green crops, because they cultivate and have seen none other; and, consequently, suppose that no other exist. Such opinions only show the ignorance and limited experience and knowledge of any writer or practical man; and if Mr. Kilby would go into Durham and Northumberland, and many other places, he will find clay farms with 80 or 100 acres of yearly fallows undrained, which may probably remain so, and where his machines would not work for one hour. The loams of Norfolk and Northampton — the southern climate and the nature of the soil—admit no comparison: no sound practical man would draw any inference. Experience has shown that draining poor clays does not convert them into turnip soils; and it yet remains to be seen if they will admit leguminous crops on Mr. Kilby's plan, and thus omit fallowing alternately. Instances have occurred of soils that possessed a previous near alliance, being converted by draining into green crop lands; but no person will infer from that circumstance, that similar results will attend draining in every soil and situation. The crops of beans are inferior after draining; on many poor lands the benefits almost disappear after a period of time, and in other cases it has destroyed the viscous tenacity in the soil so necessary to production. But we must not infer from these facts, that draining is not advantageous; it is without doubt a mighty improvement, but greater in some cases than in others. Perhaps Mr. Kilby will favour us with his plan of draining the lands I have mentioned: if he would put a drain in every furrow, and keep the ridges as they are, or drain and then level, or first level and then drain, and by what mode of levelling—for if both processes are performed simultaneously, the cost will much exceed the purchase-money of the land. The application of 60, 80, or 100 acres of tares, would be attended with some difficulty; the sheep required to consume them, would require much provision before and after, or to be bought and fattened on that land. But probably Mr. Kilby's rotation will obviate this difficulty—I would be much obliged by a statement of it. The extent of his farm is not stated; many systems are applicable on a small and not on a large scale, and the quality of the land he farms is not poor when it produces tares. Not allowing for differences in soil and climate is a fault that attends most practical and theoretical writers on agriculture—for the best application in one place is useless in another. I hope to see further notice on this important subject.

J. D.

ON TURNIPS.

(From Johnston's Lectures.)

The raising of turnips is of such vast importance in the prevailing system of husbandry, that any improvement in the mode of culture must be of extensive and immediate benefit. Experiments so numerous and so varied have been made with this view, that it may almost seem superfluous in me now to make any further suggestions on the subject. But when experiments have been made with a view to one object only, it often happens in all departments of natural science, that as new views are advanced or more precise methods pointed out, it becomes necessary to repeat all our former experiments—either for the purpose of testing the results they gave us, or of observing new phenomena to which our attention had not previously been directed.

I. Numerous experiments, for example, have been made upon the use of bones in the raising of turnips, but they have been chiefly directed to economical ends, and so far with the most satisfactory results. But among fifty intelligent and thinking practical men, and who all agree in regard to the profit to be derived from the use of bones with the turnip crop, how many will agree in regard to the mode in which they act—how few will be able to give a satisfactory reason for the opinion they entertain! The same is true of theoretical chemists, some attributing their effect more especially to the earthy matter, others to the gelatine they contain. Dry bones contain about two-thirds of their weight of earthy matter, the other third consisting chiefly of animal matter resembling glue. Of the earthy matter five-sixths consist of phosphates of lime and magnesia, and the rest chiefly of carbonate of lime. Thus a ton of bone dust will contain—

Animal matter	746 lbs.
Phosphates of lime, &c.	1245 lbs.
Carbonate of lime, &c........	249 lbs.
	2240 lbs.

On which of these constituents does the efficacy of bones chiefly depend? Does it depend upon the animal matter?—This opinion is in accordance with the following facts:—

1°. That in the Doncaster report it is said to be most effectual on calcareous soils,—for in the presence of lime all organic matter more rapidly decomposes.

2°. That horn shavings are a more powerful manure than bones,—since horn contains only one or two per cent. of earthy matter.*

3°. That before the introduction of crushed bones, the ashes of burned bones had been long employed to a small extent in agriculture, but have since fallen almost entirely into disuse.

4°. That old sheep skins cut up and laid in the drills, have been found to yield as good a crop of turnips and after-crop of corn, as the remainder of the field which was manured with bones.

5°. That "40lbs. of bone dust are sufficient to supply three crops of wheat, clover, potatoes, turnips, &c., with phosphates,"† while a ton or a ton and a half of bones, containing from 1200 to 1800lbs. of phosphates, is the quantity usually applied to the land.

On the other hand, the quantity of animal matter present in a ton of bones (746lbs.) is so small, and its decomposition so rapid during the growth of the turnips—while at the same time the effects of the bones are so lasting, and so beneficial to the after-crop of corn—that many persons hesitate in considering the great excess of phosphates applied to the land, as really without any share of influence in the production of the crops.

Thus *Sprengal*, an authority of the very highest character both in theoretical and practical agriculture, is persuaded that the phosphates are the sole fertilizing ingredients in bones; and he explains the want of success from the use of crushed bones in Mecklenburg and North Germany, on the supposition that the soils in those countries already contain a sufficient supply of phosphates, while in England generally they are deficient in these compounds.

Further, if the animal matter be the fertilizing agent in bones, why are they not of equal efficacy on grass land as upon turnips?

With the view, therefore, of leading to some rational explanation of the relative effects of the several constituents of bones, it would be desirable to institute comparative experiments of the following kinds:—

1°. With a ton of bones per acre.

2°. With seven or eight cwt. of horn shavings or *glue* per acre.

3°. With three cwt. of burned bones per acre.

4°. With thirteen cwt. of burned bones per acre.

The quantity of burned bones in No. 4 is that which is yielded by a ton of fresh bones; that in No. 3 is upwards of five times what should be taken up by the crops—as great part of what is added must be supposed to remain in the soil, while *some must be dissolved and carried off by the rains.*

The results of such experiments as these, if made accurately on different soils, will lead us sooner to the truth than whole volumes of theoretical discussion.

II. Nitrate of soda has also been applied with great benefit in the culture of turnips. Some experiments, exceedingly favourable in an economical point of view, have been made by Mr. Barclay, of Eastwick Park, Surrey,* who found that one cwt. per acre, drilled in with the seed, gave as great a return of Swedes as 15 bushels of bones with 15 of wood ashes per acre; and when the nitrate of soda was sown broad-cast, from 20 to 25 per cent. more. In every part of the country, therefore, this substance ought to be tried. And as this nitrate is very soluble in water, and may therefore be readily carried off by the rain, and as only that which is within reach of the plant is of any avail, I would suggest that not more than one-fourth of the whole should be drilled in with the seed, for the purpose of *bringing away* the plant; and that after the thinning by the hoe, the rest should be strewed along the rows by the hand or by the drill. In this way the whole energy of the salt being expended where it is required, the greatest possible effect will be produced.

III. I have already stated the reasons which lead me to anticipate highly beneficial effects to vegetation from the use of sulphate of soda; I would suggest, therefore, a trial of this salt on the turnips also, at the same rate of one cwt. per acre, and applied in the way above recommended for the nitrate of soda. Of course the intelligent farmer will vary the proportions and mode of application of these substances, as his leisure or convenience permit, or as his better judgment may suggest to him.

The entire series of experiments on turnips, above suggested, may be represented as follows, adding two plots for different proportions of the nitrate and sulphate of soda:—

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* This, I believe, is rather a matter of opinion than the result of a sufficient number of actual trials. Some trials made by Mr. Hawden (British Husbandry, I., p. 395) gave results very unfavourable to horn shavings.

† *Liebig*, p. 84. The acre here spoken of is the Hessian, about three-fifths of the English acre. The English, therefore, will require 66lbs.

* Journal of the English Agricultural Society, I., p. 428.

Burned Bones 3 cwt. per acre.	Nitrate of Soda 1½ cwt. per acre.	Bone Dust or crushed Bones 1 ton per acre.
Burned Bones 13 cwt. per acre.	Sulphate of Soda 1 cwt. per acre.	Horn Shavings or Glue, 7 or 8 cwt. per acre.
Unmanured.	Sulphate of Soda 1½ cwt. per acre.	Nitrate of Soda 1 cwt. per acre.

Some of these experiments most of you may easily try. Those with the burned bones and horn shavings, which in this part of the country are less easy to be obtained, it is not to be expected that many of you will think of undertaking. I hope, however, that they will not be lost sight of by those who possess facilities for obtaining them in sufficient quantity to make a satisfactory experiment.

In many parts of the United States gypsum is the universal fertilizer for every crop, and among the rest it is said to benefit turnips. The same opinion is entertained in Germany. I am not aware how far, in what way, or with what results it has been applied to the turnip crop in this country. A simple mode of testing its efficacy, however, would be to strew it over the plants when in the rough leaf, on part of a field, the whole of which had been already manured in the ordinary way with fold-yard manure. The difference of produce would thus show its efficacy, in the given circumstances; and the experiment could be made effectually at the cost of a single cwt. of gypsum.

I have not included *rape dust* among the trials above suggested, though it is, undoubtedly, under certain modes of management, a beneficial manure both to corn and turnip crops. There is also a diversity of opinion as to the cause of its fertilizing action, as well as a manifest difference in the effect of different samples of the dust on the same soil. Though, therefore, certain experiments which I may on a future occasion suggest, would undoubtedly throw light on the cause of the good qualities of this manure, yet as its action (taking different samples) is not *constant* on the same soil, results obtained with it cannot possess the same importance, either theoretical or practical, as those which are observed to follow from the use of bones and of saline substances, the composition of which is nearly invariable.

Many farmers, however, are in the habit of constantly using rape dust. If any of these could conveniently make experiments on the effect of different samples of the cake, from different kinds of seed, and from different oil mills, and would accurately note the results, they would perform an important service in preparing the way for that clear explanation of the cause of its fertilizing action, which is at present wanted,* and which experiment alone can discover to us.

ON THE UTILITY AND IMPORTANCE OF SCIENCE TO AGRICULTURE.

BY MR. TOWERS.

(From the Quarterly Journal of Agriculture.)

The subject of the corn laws, the difference of opinion concerning them, the jarring debates to which that difference has given rise, the dread of dependence upon foreign supply in the event of casualties, and, above all, the immense consequence of agriculture in itself, abstractedly, involve considerations of great moment. I have long had my eye fixed upon the progress of events; and, residing in the centre of a fine corn-district of our highly-favoured England, have been enabled to compare my own observations with the numerous reports from every quarter of the three united Kingdoms, which are brought continually before me in the agricultural periodicals.

Consentient evidence of recent and remote facts, with the measures and transactions of the leading agricultural societies, have proved almost to a demonstration that farming is greatly in the rear, not in any degree keeping pace with the science of the manufacturer; I therefore have embraced every suitable opportunity for several years past to advocate the establishment of agricultural schools or experimental farms, wherein experiments might be made in the large way by persons qualified to direct, analyze, and instruct by lectures, and by practical example. During the course of the last twelve months, many fugitive papers and short articles on the subject have appeared in several of the periodicals; and it has thence become apparent that the idea has gone abroad that it assumes a tangible form, and promises to lead, at no very remote period, to results which were not contemplated by any one.

I have for several months past observed the progress of opinion, and resolved to collect the evidences of that progress, as demonstrated by the communications which have appeared from time to time in the periodicals; but, while waiting for an opportunity, a work has come from the press which has not only confirmed me in my intention, but has thrown additional light upon agricultural chemistry, and afforded proof of the urgent necessity which exists to bring into action a *national* spirit of inquiry into those great truths, the importance of which is now rendered self-evident and undeniable: I allude to "Liebig's Organic Chemistry"—a work which dignifies still farther the character of a philosopher, whose fame as a refined analytic chemist was already second to none. His new work is an authority to which any one may refer with honour and safety; and I shall avail myself of it freely and confidently before I close my communication.

Amidst a number of floating hints and suggestions, I find the first direct establishment for the express purpose of practical instruction, in the *Farmer's Magazine* of August 1840, p. 108—in an article taken from the *Schoolmaster's Magazine*, described as "a publication which does honour to the north of Ireland." One passage from this article will suffice.

"The immense produce which the earth is capable of yielding is almost past conception. Every improvement in agriculture is followed by greater luxuriance; and if persons were properly educated for the profession, and societies encouraged for the dissemination of agricultural information, as is the case with all liberal arts, a given portion of ground would be rendered capable of supporting, in comfort and comparative independence, a much greater number of individuals than at present. It is well known that much good has been effected by the enterprise and experiments of comparatively uneducated agriculturists,—of what immense value would it be if agricultural schools were established throughout our land under the management of well qualified professors, who would give suitable instruction on all the branches necessary to the man who would become a successful agriculturist. A course of varied experiments could be adopted by these different institutions, and a copy of these modes transferred to each, stating their results, whether favourable or the contrary. In public seminaries the lessons could be exemplified on the farm. We now ask, *Why does not Government encourage such institutions?* The additional produce in the neighbourhood of such schools would be very considerable, and other farmers would, by imitation, carry out the plans to an amazing extent. Add to this the advantage of young men, after having become fully acquainted with the subject, both in theory and practice, spreading themselves over the land, with ability and zeal for carrying into effect their superior information. Let not the ploughman toil in ignorance —elevate his mind with knowledge, so that he may not labour in vain—enlarge his understanding, that he may have a source of enjoyment in pleasing meditation, 'while whistling o'er the furrowed land.'"

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* Its good effects are generally attributed to the oil which is left in the seed, and its varying action to the different quantities of oil left in it by different crushers. I doubt, however, if the oil ought to be considered as more than a secondary cause of its beneficial action.

In the foregoing quotation, we have a very spirited exposé of the advantages which must result from a liberal system of scientific agriculture. It contains a bold and plain statement of facts, but enters upon no regular details. However, in the number for October of the *British Farmers' Magazine*, 1840, we meet with a full account of "the proposed establishment of a Yorkshire Agricultural School and Model-Farm," the heads of which will be concisely noticed.

The Secretary of the Yorkshire Society was requested to draw up the outline of a plan of an establishment. This outline we find at pages 265-7.

"*A Scheme for the establishment of the Yorkshire Agricultural School and Model-Farm.*

"1. Capital from 6000*l.* to 10,000*l.* to be raised by shares at 10*l.* each, with power to the committee to increase the number of shares.

"2. The whole business to be conducted under the management of a committee of twenty-one proprietors, to be elected by the shareholders; seven of the committee to retire annually.

"3. A professor of agriculture, and, if required, other assistant masters, to be engaged.

"4. Committee to take a farm of a varied soil, with suitable dwelling-houses and offices, and of an extent not less than acres, on a lease for fourteen or twenty-one years.

"The FARM establishment to consist of the *master*, whose duties shall be to superintend the religious and moral conduct of the pupils living at the farm; to instruct them in reading, writing, arithmetic, and surveying, and to keep all the accounts of this branch of the establishment. A matron, to take the entire charge of the household and dairy department. A *farm-manager*, to superintend the farm, under the direction of the committee, and instruct the pupils in all rural work. A *dairy-maid*, and other servants in proportion to the number of the pupils. *Pupils* who wish to divide their time between manual farm-labour and study, to have the privilege of attending the lectures on subjects more or less connected with agriculture at the collegiate school in York. None to be received under thirteen years of age. Payment, *l.* per annum, to be made half-yearly in advance. To wear a hat and jacket of the uniform of the college-farm.

"Certificates to be given to such pupils as have made a satisfactory progress."

The college school to comprise lectures on agriculture, geology, botany, chemistry, mechanics, and the veterinary science. The students to attend the farm three days a week, accompanied by the agricultural lecturer, where they would be instructed in the practical departments during six hours.

"*Mode of conducting the Model-Farm.*

"The farm to be conducted upon the acknowledged best principles of husbandry, with a sole view to *profit*, but to accept all offers of experiment that might be tendered to them by the Royal or Yorkshire Agricultural Societies, under the express engagement that, if unsuccessful, the loss shall be defrayed by the Society at whose suggestion the experiment was made. New and improved implements to be received upon loan, their merits or defects to be ascertained, and certificates to be given to the owners when the implements are returned. A general depôt and museum to be held at the farm, under the direction of the Agricultural Society.

"No gentleman, enrolling his name as a shareholder, to be subject to a call for money, until one hundred shares are subscribed for. A committee to be then formed, and a banker and secretary appointed; but no shareholder to be called upon for more than 1*l.* per share, until 300 shares are taken, nor, under any circumstances, to be liable to a payment beyond the amount of his original shares."

This is pretty well in the beginning, as it proves that the scheme begins to assume a definite form, especially if we take into the account (as seen in the same article) that, in the county of Kent, a similar feeling had elsewhere already been incited; for, "on the 10th of January 1839, a number of influential gentlemen met at Maidstone, for the purpose of promoting a public scheme of agricultural education; on which occasion a sub-committee was formed for the framing and maturing the scheme of a '*Kent Agricultural College*;' and on the 14th of May subsequently, their plan having been submitted to a public meeting held at the town-hall at Maidstone, was confirmed. In order to raise subscriptions for this object, an appeal has been made to the disinterested or patriotic motives of its well-wishers, as well as to the consideration of those who were inclined to promote such an undertaking under the usual prudential stipulations of interest for money advanced. Hence both free donors and subscribers were invited to assist in the undertaking."

So important is the object in itself, so great, so consequential in its results, that nothing short of a grand effort on the part of those who have positive influence can be found adequate to effect it. The "Royal Agricultural Society of England," in unison with the "Highland and Agricultural Society of Scotland," and acting together in concert, might do much; but we look to the nation—to the Government—in a word, to the nationalization of the scheme, for the crowning effort; or, in a word, for that which, by success, must ensure the good of every one of all ranks and conditions.

I find, in the *Farmer's Magazine*, December 1840, at page 433, a letter on the establishment of model-farms from Mr. Mackenzie, per date Oct. 26, wherein the doubts evpressed of the power to command funds for their establishment, are met by the suggestion already hinted at above, viz. that "the case with our Royal and Highland Societies is different. They have large funds at their disposal, they have large capital invested in various modes, which capital could be as safely invested in the stocking of one or more farms under their superintendence; which would, if we judge from the profits on farming gained by all good agriculturists, return them a far larger revenue than it can, invested as it now is, in the funds, or in mortgage."

I shall not do more than make a simple allusion to the steps which appear to be in progress in France; but certain it is that if we are not on the alert, our neighbours on the continent will outstrip us on the road to this commanding station of agricultural pre-eminence. But I must by no means pass over "Bache's Report" on education in Europe, whence we have obtained an account of the "Institute of Agriculture and Forestry at Hohenheim, near Stuttgard," which our reporters have pronounced to be "the most complete agricultural school in Europe, the usefulness of which extends throughout and beyond Wurtemburg.

"It was established in 1817 by the Agricultural Society of Wurtemberg, under the patronage of the King, who devoted a royal seat with extensive building to the purpose of the institution. The farm includes nearly one hundred acres, exclusively appropriated to the support of the school, or the practical instruction of the pupils. In 1820, the school of forestry was united with this, and the pupils now follow, in part, the same courses.

"The entire institution is divided in two departments, one of which is intended to give a higher general and practical education than the other. In the higher, the object is less the acquisition of manual dexterity in the operations of agriculture, than the knowledge required to superintend them; while in the lower, the practice is the principal end. The latter department ranks with the rural school of Switzerland, and the agricultural school of Templemoyle in Ireland. In the higher school, all the pupils are expected to pay for their education. In the lower, natives of Wurtemberg are admitted gratis, if their circumstances require it. Foreigners may be admitted to either; they being, however, on a much higher scale than those of the natives. The direction of the establishment is delegated by the agricultural society to a director and treasurer, the former of whom has the general superintendence of the institution, while the latter is responsible for its financial state to the Royal Exchequer. The director is also an instructor. There are four extraordinary inspectors, besides an overseer and steward, for the management of the farm and domestic economy. The treasurer has a book-keeper and an assistant in this department.

"Pupils are admitted at seventeen years of age, and are expected to possess elementary attainments necessary to the prosecution of the courses of the school. Between 1829 and 1836, 180 natives, and 142 foreigners, have been educated in agriculture, and 147 natives, and 177 foreigners in forestry, making a total of 539 in the institution. The number of pupils in the higher school in 1836 was seventy-two; that in the lower school is limited to twenty-seven. The pupils in the *lower* school in general come under obligations to remain three years at the institution, in consideration of which their payments for instruction are diminished in part in the second year, and cease in the third. They are engaged in the operations of the farm, the garden, and other parts of the establishment, which will be hereafter enumerated, under the direction of the workmen, and under the superintendence of the steward, their time being so distributed that they may acquire practice in the various operations of farming. They are also required to attend certain of the lectures given to the higher classes, and receive instruction at times when they are not engaged in agricultural labour. They receive regular wages for work done, from which they are expected to pay for their maintenance and clothing. Premiums are given to those who display great skill and industry. While in the house the younger pupils are under the charge of the elder ones, and all are under the general superintendence of the overseer. The same superintendence exists in the refectories and dormitories. It subserves the double purpose of economy, and of training the elder pupils in the management of men, which is one object of their education. The institution undertakes to find places for those pupils who have given satisfaction while in the school on their completing its course.

"The agricultural courses of the *higher school* may be accomplished in one year, if the preliminary studies of the pupil have been directed with a view to his entering, but in general it requires two years. The same period of two years is required for that of forestry. Each scholastic year has two sessions; the one from the 1st of November to Palm Sunday, and the other from two weeks after Palm Sunday to the 1st of October; the intermediate periods are vacations.

"The branches of special theoretical instruction are as follows:—

"First,—*Agriculture.* General principles of farming and horticulture, including the culture of the vine. The breeding of cattle. Growing of wool. Raising of horses. Rearing of silk-worms. Arrangement and direction of farms. Estimation of the value of farms. Book-keeping.

"Second,—*Forestry.* Encyclopædia of forestry. Botany of forests. Culture and superintendence of forests. Guard of forest-hunting. Taxation. Uses of forests. Technology. Laws and regulations, accounts, and technical correspondence relating to forests.

Third,—*Accessory branches.* Veterinary art, agricultural technology, especially the manufacture of beet-sugar, brewing, vinegar-making, and distilling. Natural history of animals, beneficial or noxious to plants or trees. General Chemistry; and its application to agriculture, physiology, and meteorology.

"Fourth,—*Mathematics.* Theoretical and practical. Geometry. Elements of trigonometry. Arithmetic. Elements of Algebra.

"The institution possesses the most ample means for the illustration of the courses in its farm and collections. The farm is divided into arable land, about 501 acres; meadow land, 242 acres; *fields set apart for experiments,* thirty-three acres; woodland, thirteen acres; nursery, sixty-seven acres, plantation of hops, two acres; botanical garden, fourteen acres; garden, one acre; the remainder, eighty-five acres. Total, 960 acres. The arable land is cultivated according to five different rotations of crops, that the pupils may have specimens of the varieties of the systems. The botanical garden, nursery, and experimental farm, are prominent parts of the establishment. There is a large stock of cattle of different kinds, foreign and domestic, and of sheep, that the pupils may acquire practical knowledge of the relative advantages of different breeds, the mode of taking care of the stock generally, and of rearing them for different purposes. Horses are kept for a riding school, as well as for the purposes of the farm. The institution has a large collection of agricultural implements in use in Wurtemburg, and of models of the varieties of foreign and new implements. These are made in a workshop attached to the school, and afford practice in the manufacture to the pupils, as well as instruction by their use or inspection, with the explanations of the professors. The sale of these implements and models also contributes to the support of the establishment. There are two collections of seeds and grain—one as specimens for illustrating the lectures, the other in quantities for sale. The pupils learn the mode of preserving them, and useful seeds are distributed through the country. There is a collection of soils of all kinds for the lectures in terra-culture, and the analysis of soils, with specimens of the means of amelioration used in different cases. The collections of natural history, though small, are interesting, from the precise adaptation of the specimens to the objects of the school. They consist of birds, beasts, and insects, and of plants, woods, and rocks. The woods are arranged in the form of a library, the separate specimens having the forms of books given to them, and being covered in part with the bark. The name is inscribed upon the back. Cross and longitudinal sections are usually found in the same book, forming the covers. Between the covers is a box containing the seed and flowers of the tree, the parasites, &c., and a description. There is a small collection of physical apparatus, a library, and a laboratory. The following farming and technological establishments are connected with the school, and worked by the pupils under the charge of the teachers, viz. a cider-press and appurtenances, a beet-sugar manufactory, a brewery, a distillery, and a vinegar manufactory. Though I saw better individual collections than these, the whole suit stands unrivalled, as far as my examination extended.

"Examinations take place every year, which are obligatory upon those forestry pupils who intend to enter the service of the government. Persons wishing to learn the details of the institution, may be received as visitors for a period not exceeding a month, living with the pupils.

"Each pupil in the higher school has his own sleeping-room; or, at most, two rooms together. They take their dinner and supper in a common hall, and order what they please for breakfast from the steward's assistant.

"This institution has supported itself for several years, which is readily to be understood from the scale of its farming operations. The success of the farm does not depend exclusively upon the productive manual labour of the pupils. It is analagous to the support of a family upon a large estate, the members of the family aiding in the work, and contributing also in money to their own support; but the working of the farm not depending entirely upon their manual exertions."

It would be superfluous to multiply quotations; the foregoing clear recital of the institution of Wurtemberg is quite sufficient; it tells of facts—of the actual working of a system; hypothesis is out of the question. We have now to determine for ourselves; and as this proof direct of what *can* be effected, with means far more limited than ours, is placed before us, it remains to be seen whether or not this great and powerful empire will determine to bring its agriculture to perfection.

Since I commenced this article, No. 52 of the Journal has come into my hands, and I have perused the report of the committee of the Highland Society at page 497. It is an interesting article, and must not be passed in silence. "The committee fully admits that advantages might result from the establishment of a farm, to be set apart for the performance of useful experiments, and where there should be the means of putting to the test of practice the suggestions of agriculturists. But the directors conceive the objects of investigation, &c., in agricultural practice to be of *so extended* and *diversified* a character, *that it cannot be so well carried on in one spot, one climate, and nearly* one soil, as by the Society's present practice, which brings it at once to the doors of a great many acute examinators in every part of the country, and causes the trial to be made simultaneously under every possible variety of situation and circumstance."

It is manifest that there is no heart in the business, and every plausible reason that presents itself for putting a negative on the application of the Society of Wester Ross is adduced: thus—"there is no difficulty of getting correct reports of numerous and complicated experiments from practical men, and no want of enterprise where there is a reasonable prospect of success in any new inquiry;" it is feared that were *the funds* requisite for such an undertaking procured, "the scheme would have the effect of cramping the energies of private experimentalists, which they *must regard* as the most useful channel for research," &c.

I feel no inclination to blame the Society or its directors; the plan *may* be "inconsistent with the present system of the Society, which is not to be the experimenter, but to encourage, stimulate, and, in some cases, partially remunerate those who are about to make, or who have made, experiments for the improvement of agriculture." It may also be perfectly true, "that such a farm, and for such purposes as are contemplated in the 'suggestions,' would, in a very short time, exhaust the *capital*, instead of the portion of its annual income proposed by the projectors" (498); but, nevertheless, it is clear that the gentlemen who have reported on the subject, neither understand its tendency, nor appreciate its importance. We are now therefore taught to expect nothing from application to societies; and I cordially hope that no one will, in future, attempt to sway them from their ordinary course. "Let well alone," is a good old maxim; and societies are acting well and correctly to a certain extent, and thus effect much good. Their system of prizes for *essays*, for improvements in machinery, for exhibiting large and fine-bodied cattle, induces competition and rewards diligence; but it is widely removed from—far below that grand system of national education in the scientific practice of agriculture which would double the value of estates, and place, by its results, the whole kingdom in a position which, under Providence, would defy contingencies, and leave nothing of the corn laws but their name. I am not alluding to any visionary scheme; the example of Wurtemburg is before us; the prospectus of its plan and organization is well defined, and its results have been proved; and here, by the bye, it will not be irrelevant to retrace what the Report says in allusion to foreign institutions, p. 503.

"A model farm may, perhaps, be useful in such countries as Russia or Germany, large portions of which are still unreclaimed from a state of nature, and in no part of which agriculture has reached the same perfection as in this country; where, moreover, there is neither the same enterprise on the part of agriculturists, nor the same immediate knowledge of any important discoveries as in this country. It is understood that model farms for the encouragement of agriculturists have been, in those countries, established by the authority of government, and are supported out of the national funds. But the case is very different in Great Britain, to almost every region of which, especially in Scotland, agriculture in its most improved state has reached, or is fast extending, and where, of all countries in the world, less artificial stimulus is necessary to foster discovery and improvements in the arts."

This is fair, and its argument, so far as it refers to the directors of an institution who are constantly changing, conclusive. Directors could not manage and give energy to an establishment which would demand the superintendence of an individual of mind and foresight, ever on the spot. But what can we say of the assertion at p. 504, "that there is scarcely a useful experiment which there are not agriculturists in the country ready to make. Indeed, there is scarcely any extensive and intelligent farmer *who is not engaged* in experiments of some kind or other; and these experiments, it is to be observed, are performed under circumstances the most favourable for leading to useful results, and, ultimately, to general information."

I have resided ten years in Berkshire, in a noted agricultural district; I have known, conversed with, and watched the practice of, several large and influential farmers; but never, in one solitary instance, have I met with an appeal to science—never was a question of experiment and research into causes proposed: on the contrary, it was far more common to hear some such observation as the following—"I am not one to follow new practices, or to make experiments—not I! My business is to look on, and wait; it is time enough to alter when one sees the result—let others try if they like it." How they manage matters in Scotland I know not; but I appeal to the honest candour of the reader, whether he ever met with a free spirit of investigation and inquiry? At least I fear that in the rich soils and more genial climate of England, ninety-nine farmers of a hundred are more inclined to justify and abide by the course of ordinary routine, than to search after improvement, unless indeed it offer itself in the form of some mechanical implements on the one hand, or of a large-bodied animal clothed with a superabundance of fat, by means of a treatment quite remote from that dictated by nature, on the other. It would, I fear, be far more correct to assert that, heretofore, agriculturists have rather despised the assistance of science than that they have been, or are, on the alert to make and investigate the results of experiments. Dr. Liebig approaches the truth when (after pointing out a tissue of facts and phenomena which cannot be gainsayed) he observes:—"But agriculture has hitherto never sought aid from chemical principles based on the knowledge of those substances which plants extract from the soil on which they grow, and of those returned to the soil by means of manure. The discovery of such principles will be the task of a future generation; for what can be expected from the present, which recoils from all the means of assistance offered it by chemistry, and which does not understand the art of making a rational application of chemical discoveries? A future generation, however, will derive incalculable advantage from those means of help."

It is refreshing to turn to such an article as that which Mr. Hannam has written, on the Importance of Agriculture. (*Vide* Farmer's Magazine, p. 271, vol. iii.) I join in every sentiment, with the exception of that expressed on the corn laws; though he is perfectly correct in the preference which he assigns to agriculture,—which is indeed "the foundation of manufacture, the products of nature being the materials of art." A perfectly impartial speculator, loving and admiring everything connected with the glorious productions of nature, and educated to no other profession than that of pure chemistry, I see in the workings of the corn laws nothing but strife, discordance of opinion, and evil-working jealousy. I discover no beneficial equability of prices, no remuneratory profits—but great, deceptive, and ruinous fluctuations. Hence I would reduce them to a mere by-word—a thing below debate or argument; not by the partial free-trade alluded to by Mr. Hannam, but by exalting the science of agriculture to a power of prolificity, which should, as before observed, render all foreign interference or supply an affair of mere possible contingency.

Here, then, I beg to refer the reader to every line of the article that follows, which commences with the words—"That 'nothing is better than agriculture,'" and re-echo all his propositions—let every numbered paragraph be reperused and appreciated, and there will be found a complete answer to all the objections that were urged by the writer of *The Report on the Establishment of an Experimental Farm.*

It will be needless to extract any of the matter of Mr. H.'s paper, but I must not refrain from glancing at what he says of the Yorkshire Society. "It has been proposed at York to establish a professorship and model farm for this purpose; but to make it a branch of York Collegiate School! this, in my opinion, is not only impolitic but unjust;"—and so it is—and *York must not be the model.* But can we say the same of the Wurtemburg Institution? I think not; and trust that, by the perusal of the detail which I now furnish, Mr. Hannam's noble zeal will be roused, and kindle that of other able and argumentative writers, so that the land may resound with the words, and spirit too, of "agricultural education." But "*The State*" *must be the motor.* No power short of that of the Government can effect a universal establishment of institutions; and hereupon I fear the operation of our representative government. We want one mighty unity—a commanding, benevolent will; and here we discover the machinery of the German institution. A body of legislators would perhaps be worse than one of moveable directors; nevertheless so grand, so imperative is the motive, that we must continue to urge, to impress, till the national will and voice be brought to bear, by efforts unresistible, on the question of national establishments.

I shall now attempt to corroborate all that has been said on this subject, by adducing the authority of Liebig's most argumentative and scientific treatise: the indispensable necessity of applying chemical principles to the perfecting of agricultural practice will thereby, I believe, be placed beyond the range of doubt. I extract the following from the section "*On the Art of Culture.*"—"The development of the stem, leaves, blossoms, and fruit of plants, is dependent on certain conditions, the knowledge of which enables us to exercise some influence on their internal constituents, as well as on their size. It is the duty of the natural philosopher to discover what these conditions are; for the fundamental principles of agriculture must be based on a knowledge of them. There is no profession which can be compared in importance with that of agriculture, for to it belongs the production of food for man and animals; on it depends the welfare and development of the whole human species, the riches of states, and all commerce. There is no other profession in which the application of correct principles is productive of more beneficial effects, or is of greater and more decided influence. Hence it appears quite unaccountable that we may vainly search for one leading principle in the writings of agriculturists and vegetable physiologists. The methods employed in the cultivation of land are different in every country and in every district; and when we inquire the causes of these differences, we receive the answer, that they depend upon circumstances. No answer could show ignorance more plainly, since no one has ever yet devoted himself to ascertain what these circumstances are. Thus, also, when we inquire in what manner manure acts, we are answered by the most intelligent men, that its action is covered by the veil of Isis; and when we demand further what this means, we discover merely that the excrements of men and animals are supposed to contain an incomprehensible *something* which assists in the nutrition of plants, and increases their size. This opinion is embraced without even an attempt being made to discover the component parts of manure, or to become acquainted with its nature. In addition to the general conditions, such as heat, light, moisture, and the component parts of the atmosphere, which are necessary for the growth of all plants, certain substances are found to exercise a peculiar influence on the development of particular families. These substances are either already contained in the soil, or are supplied to it in the form of the matters known under the general name of manure. But what does the soil contain, and what are the component parts of the substances used as manure? Until these points are satisfactorily determined, a rational system of agriculture cannot exist. The power and knowledge of the physiologist, of the agriculturist and chemist, must be united for the complete solution of the questions; and in order to attain this end, a commencement must be made."

It may be said that the author, being a German, has his eye upon German farming, and refers to it when he thus expresses himself, that " in Britain the case must be different, for knowledge spreads and is eagerly sought for, and that experiments are performed everywhere, and their results reported."—" We certainly are in the advance of other states; but, as to a spirit of inquiry, I have not discovered it. The seed, it is true, may be sown, but its developments are still below the surface, and have not advanced to the light: let us, then, urge a renewed sowing, for who knows which will prosper?" Again,

" The *general* object of agriculture is to produce, in the most advantageous manner, certain qualities, or a maximum size, in certain parts or organs of particular plants. Now this object can be attained only by the application of those substances which we know to be indispensable to the development of these parts or organs, or by supplying the conditions necessary to the production of the qualities desired. The rules of a rational system of agriculture should enable us to give each plant that which it requires for the attainment of the object in view.

" The *special* object of agriculture is to obtain an abnormal development and production of certain parts of plants, or of certain vegetable matters which are employed as food for man and animals, or for the purposes of industry."

These are facts which are self-evident, but they imply a system, and *that* can be perfected only by means of scientific recorded experiments: the knowledge of causes and effects cannot be obtained at random.

" The increase or diminution of the vital activity of vegetables depends only on heat and solar light, which we have not arbitrarily at our disposal; all that we can do is to supply those substances which are adapted for assimulation by the power already present in the organs of the plant. But what, then, are these substances? They may easily be detected by the examination of a soil which is always *fertile* in given cosmical and atmospheric conditions; for it is evident that the knowledge of its state and composition must enable us to discover the circumstances under which a *steril* soil may be rendered fertile. It is the duty of the chemist to explain the composition of a fertile soil, but the discovery of its proper state or condition belongs to the agriculturist."—p. 141.

The practical man, however, is not in a condition to experimentize or arrive at deductions: he possesses neither time, knowledge, apparatus, nor convenience; how, then, can he act? The rising generation, educated in national county seminaries, under able agricultural chemists, will finally solve the important question. Every district has its peculiar distinctive capabilities: each, then, ought to be separately studied. It was to exemplify this great object that I adduced the article on Stinchcombe farm—(p. 528.) Mr. Dimmery's successful practice evinces his discernment of local capabilities. It is not, perhaps, for me to contend whether or not his course be a rotation. I used Mr. Morton's expressions without any reference to my own opinions; but with all deference to the able editor, who knows how I esteem him and respect his authority, I think that any routine which (above two crops, for they could only be considered as an alternation) produces a regular recurrent order of cropping, must be *de facto* a rotation or course. If the four-course of Norfolk be a rotation, so may be, with equal justice, considered the triennial succession of turnips, potatoes, wheat.* Be this as it may, " that which is best administered is best," and so to administer demands local investigation and observation.

Chemistry is indispensable to scientific agriculture; for no one but a chemist could discover the phenomena now to be detailed.

" It is known that the aluminous minerals are the most widely diffused on the surface of the earth; and, as we have already mentioned, all fertile soils, or soils capable of culture, contain alumina as an invariable constituent. There must, therefore, be something in aluminous earth which enables it to exercise an influence on the life of plants, and to assist in their development. The property on which this depends, is that of its invariably containing potash and soda."—p. 143.

A table is given at p. 144, which shews the immense quantity of potash that is contained in five different species of rock and earths. From whence and other data, it is estimated that "a thousandth part of loam mixed with the quartz in new red sandstone, or with lime in the different limestone formations, affords as much potash to a soil only twenty inches in depth, as is sufficient to supply a forest of pines growing upon it for a century. A single cubic foot of felspar is sufficient to supply a wood covering a surface of 40,000 square feet, with potash required for five years."

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* No doubt it may be so called; but a distinction should be made betwixt a rotation which maintains itself, as the Norfolk four-course does, and one which requires the extraneous aid of independent permanent grass to carry it on, as does the triennial course at Stinchcombe. We should not have thought it worth while to have pointed out this difference, had the notice of the farming pursued on Stinchcombe farm been confined to a simple account of Mr. Dimmery's operations; but when his peculiar practice *seemed to us* to be recommended for general adoption both by Mr. Morton and our own correspondent, it became necessary to show its unfitness for universal adoption.—Editor.

On the subject of bone-manure (p. 184), we find that "the primary sources from which the bones of animals are derived, are the hay, straw, or other substances which they take as food. Now, if we admit that bones contain 55 per cent. of the phosphates of lime and magnesia,"—as by Berzelius, and as provable, pretty nearly, by every manufacturer of phosphate of soda,—"and that hay contains as much of them as wheat-straw, it will follow that 8lbs. of bones contain as much phosphate of lime as 1,000 lbs. of hay or wheat-straw, and 2 lbs. of it as much as 1,000 lbs. of the grain of wheat and oats. These numbers express pretty exactly the quantity of phosphates which a soil yields annually on the growth of hay and corn. Now, the manure of an acre of land with 40 lbs. of bone-dust is sufficient to supply three crops of wheat, clover, potatoes, turnips, &c., with phosphates."

Several erudite observations upon bone-manure follow; but it is not my desire to enter upon any inquiry into the operation of manure of any kind, but solely to prove the paramount importance of science and education. The extracts which now follow point to the same great end.

"The salt-muriate of lime (or chloride of calcium) is one of those compounds which attract water from the atmosphere with great avidity, and might supply the place of gypsum in decomposing carbonate of ammonia, with the formation of sal-ammoniac, and carbonate of lime. A solution of bones in muriatic acid, placed on land in autumn or winter, would therefore not only restore a necessary constituent of the soil, and attract moisture to it, but would also give it the power to retain all the ammonia which fell upon it dissolved in the rain during the period of six months."—p. 185.

Thus, then, rain-water contains and supplies the earth with *ammonia;* snow does the same; and chemistry has discovered and revealed the phenomena. Chemical science, therefore, is vital to agriculture.

"It must be admitted as a principle of agriculture, that those substances which have been removed from a soil must be completely restored to it, and whether this restoration be effected by means of excrements, ashes, or bones, is, in a great measure, a matter of indifference. A time will come when fields will be manured with a solution of glass (silicate of potassa), with the ashes of burnt straw, and with salts of phosphoric acid prepared in chemical manufactories."—p. 187 8.

I stop here. Peace seems the order of the day,—as if, indeed, it were becoming "*the desire of all nations.*" What a consummation would it be to witness the establishment of national agricultural establishments by national funds, devoted to the blessed labours of the field, instead of being wantonly squandered in the perpetration of acts of violence and the destruction of human life and happiness!

THE TURNIP QUESTION.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—Permit me, as an agriculturist, to thank you for having opened your pages to the discussion of the turnip question. As Mr. Matson's assertion that he could and had grown 40 tons of Swedes per acre appears to be doubted by some, I wish to state that at the meeting of the Stratton Agricultural Society, the Rev. John Davis, of Kilkhampton, Cornwall, had the highest prize awarded to him for his piece of Swedes, and the weight was declared by the judges at 40 tons per acre. Mr. Adams, of Morwinstow, had the next premium for Swedes—the weight 23 tons per acre; and in part of the field where he had made an experiment with bone-dust, the weight was declared at 39 tons per acre. The judges were very particular in weighing and measuring the different fields; and as they are practical farmers on a large scale, there can be no doubt thrown on their testimony. The land in which Mr. Davis's crop grew was in a very good state of cultivation, but no judge of land would value it at more than 15s. per acre. There were many other competitors for the turnip premiums, the weight of whose crops varied from 23 to 30 tons per acre, and one gentleman said that in the last season he had grown 28 tons of Swedes per acre, the tops and tails having been taken off, where he had been told they would not grow. The meeting passed off very well, and I believe many of the company who had before been of opinion that turnips could not be grown to any extent in this district, went home convinced of their error. Fearing that I am trespassing too much on your patience and that of your readers, I beg to subscribe myself,

A CONSTANT READER AND A SUBSCRIBER.
North of Cornwall, June 28, 1841.

REMARKS

ON THE EVIDENCE PUBLISHED BY THE LATE COMMITTEE ON BANKS OF ISSUE, ADDRESSED TO THE MANCHESTER CHAMBER OF COMMERCE.

LETTER II.

Having shown the use of accurate definitions for allotting a fixed meaning to the *terms* used by the witnesses brought before the Committee, and the use of a reference to original principles, as a test to prove the correctness of the *opinions* advanced by them; I now come to the explanation of the extraordinary effect which appears to be produced by the contraction or extension of the bank-note circulation, which, even in its greatest fluctuation, must bear so small a numerical proportion to the immense amount of the currency at large, including, as I have endeavoured to show it does, the entire amount of bills, promissory notes, cheques, &c., as well as Bank-notes and specie, which all come within the definition of currency, as given in my first letter.

How this effect comes to be produced seems to me easily to be understood, when it is considered that all those bills, promissory notes, &c., which serve as currency, and carry on such a large portion of the exchangeable transactions of the community, evidently derive their capacity of acting as currency from the state of credit being such, that no doubt exists in the mind of the receiver of his being able to procure cash for them, in regular course, by discount, when he shall require it, or if disappointed in this, that he shall, at least, receive the cash on their becoming due. But when a contraction of the currency takes place, even to a very moderate extent, the difficulty of getting discount is unavoidably increased, and *long bills* cannot be got discounted; of course they are thrown out of circulation, as people will not sell for bills which cannot be turned into cash. Credits are, therefore, generally shortened, and if the contraction proceeds further, so as to render the discount of shorter bills difficult, then a still further number are thrown out of circulation, and only the most unexceptionable will be taken; and if this interruption of confidence, and consequent stoppage of trade, really cause many to be unable to fulfil their engagements, then comes a panic, when bills and promissory notes are almost all refused, and the exchangeable transactions are confined to cash payments.

Thus but a moderate contraction, being accompanied, as it always is, by a certain degree of alarm and difficulty of getting discount, may lessen the amount of the currency employed in the commerce of the country to an amount almost incalculable. I believe it will not be denied that in ninety-nine cases out of one hundred, all the exchangeable transactions of commerce and manufactures of any extensive character are carried on by the bill currency on ordinary times; and if, upon the occasions alluded to, these bills are thrown out of circulation, it is clear the embarrassment felt in the commercial classes will not be in proportion to the trifling contraction in Bank-notes, but will correspond with the amount of the bill currency thrown out of employ in the manner just stated. But, for the greater satisfaction of the reader, it may perhaps be necessary to attempt some calculation which may give some more definite idea of the actual amounts thus operated upon. For this purpose let us take a calculation recently made, founded on the extent of bill stamps annually made use of. In this calculation the average length of the bills was conceived to be three months, according to which estimate the sum actually afloat in bills was little short of 150 millions. Supposing, then, the average term of three months just mentioned to have been composed of bills, one-third from five to six months; one-third from three to four months; and one-third from one to two months, it becomes evident, that if, by any diminished facility of obtaining discount, the five and six months' bills are no longer negociable; then, as they are supposed to form one-third of the bill currency, a contraction immediately takes place of 50 millions (being one-third of 150 millions calculated to be always afloat), and if the term of discount is further reduced, so that three and four months' bills are no longer negociable, then another 50 millions is taken out of circulation, and so in proportion as the term of discount may be still further reduced.

The foregoing seems sufficiently to account for the enormous effect produced in the commerce of the country, by but a comparatively small contraction of the Bank-note portion of the currency; and the same mode of reasoning will likewise shew the great effect of an equally small *extension*, for any such extension is always accompanied by a facility of obtaining discount, by which means bills and promissory notes, being readily turned into cash, they again acquire their value as currency, being freely taken in exchange for commodities. Thus an immense impulse is given to every branch of trade and manufacture—those who could not buy before can *buy now*, and of course those who could not sell before *can sell now*. Thus the difficulty which had interrupted both buying and selling being removed, commerce, which consists in buying and selling, revives and flourishes until another contraction comes on again to change prosperity into penury, and turn riches into ruin.

From this view of the subject, it would appear that the difficulty or the facility of obtaining discount by operating on the immense amount of bill circulation, is the immediate cause of those fluctuations in the state of commerce and manufactures, which forms the ground of the complaint of the Manchester Chamber of Commerce; and if Mr. Smyth had grounded his attack on the Bank Directors for their conduct in this particular, he would have triumphed in the argument; because it appears, by the published returns of this Bank, in appendix No. 14, that between August, 1835, and February, 1836, there was no less a sum than seventeen millions advanced by the Directors at a reduced rate of interest; and by appendix No. 19, it appears that these loans were continued from month to month, so that the money market was so glutted, that the regular discounts of the bank were kept at about five hundred thousand pounds during the spring of 1836; when, as in 1837, when these loans, at reduced rates, were called in, money became so scarce, that the London discounts at the Bank rose to six and seven millions, and the country discounts to above eight millions. I leave it to the Directors to explain this in whatever way they may think best, but there can be no denying that the almost entire want of demand for regular discount in 1835-6 was a certain proof that money was then abundant, and that the increase of the demand for discount in 1837, was as certain a proof that money was scarcer, which corresponds with the assertions of the Manchester Chamber of Commerce; but it may well be conceived that, although the Bank-note issue was greater in 1837, the demand for it, in order to make good the repayment of the advances which were discontinued, might readily enough make money most exceedingly scarce, even though the generality issued was greater than usual, and without some extra issue of this kind the repayment of the said seventeen millions could not have been practicable. Advances such as these are almost always accompanied by an extension of the term of discount or loan, or by a reduction of interest, which, by lowering the rate of discount, disables the Banks of deposit from giving the same interest on lodgements; nor can capitalists receive the same interest for *new* loans; they are obliged to reduce the rate on those previously made, or else they would be paid off. Thus all the floating capital of the community is unseated, and sent in search of investment in foreign securities, foreign loans, railroads, joint-stock speculations, &c., until the usual effect being produced over an efflux of specie, the Directors begin to get alarmed—their advances on securities are not renewed—discounts become difficult, and the consequences to the bill currency just stated immediately begin to take place.

Upon these occasions the policy of the Bank Directors seems always to be directed to effecting as great a reduction as possible in the price of all exportable commodities, in order to produce a greater demand from abroad, and by thus increasing the export, turn the exchanges, and put a stop to the drain for specie; but it may be doubted how far this plan can be relied on to accomplish its object. It is evidently not the *quantity* exported which can have any effect on the exchanges—it is the *sum they are worth*; therefore in reducing the value it is quite evident that what may be gained in one way may be more than counterbalanced by the loss in another. For example, suppose 100 pieces of calico to be worth for export 20s. a piece, these 100 pieces will be value for a bill of exchange for £100. But supposing a contraction of the currency reduces the price one third, say to 13s. 4d. a piece, then it will require 150 pieces to be exported at that price to produce the same bill. To some, perhaps, this may appear an exaggerated statement, but so far from that being the case, I shall take the deduction of the price of yarns from a statement lately made in *The Times* newspaper, the accuracy of which has not, I believe, been questioned. According to this statement, the price of water twist, No. 30, at Nov. 15, 1835, before the panic, was 17½d. to 18d. for good and very good; but in 1839 and 1840, the same description of yarns were to be had at 11d. to 12d. In mule yarn, from the same authority, the price, Nov. 15, 1835, was 19½d. to 20d.; and at Nov. 15, 1840, the same yarn was 11d. to 12d. Now it would take an export of 166⅔lbs. at 12d., to make up the same sum that 100lbs. would produce at 20d.; therefore when Sir Robert Peel made his celebrated speech in answer to the Manchester Chamber of Commerce, he merely made his reference to quantity; and the same answer may still be given if we can place confidence in the statements made as to the exports within the last year. But will any one assert that the export has *in*creased in any degree equal to what the value has *de*creased, and the fact is in full conformity with this view of the question; for notwithstanding all the suffering and distress this reduction of price has produced, the long-looked-for turn in the exchanges has not yet taken place, and most likely never will until the prices of our exports shall be advanced.

Whoever reads the foregoing attentively will, I think, be convinced that it is *not* by lowering the price of manufactures alone the exchanges can be turned, for the fall of price overbalances the quantity exported in consequence; but the turn of the exchanges is produced by the scarcity of money affecting the price of *imports,* and rendering them unprofitable: this directly lessens the demand for bills, and thus a change is produced.

I think I have shown in this letter what I proposed to do, viz., how the trifling increase or decrease of the Bank-note issues produces such an extraordinary effect upon the amazing amount of mercantile and manufacturing transactions to which, in numerical accounts, they have so trifling a proportion. I have added some remarks upon the effect produced by the contraction of the currency on turning the exchanges, by means of a fall in the price of manufactured articles. I should now conclude my observations, were it not that there seems to me a principle formerly advocated by Mr. Palmer, in 1832, which appears still to have an influence, but which is so directly opposed to those principles quoted from Mr. Blacker, that I think it worth devoting a short time to its consideration.

I allude to Mr. Palmer's evidence in 1832, which asserted that the issue in the discount of mercantile paper was the *worst issue* that could be made, which principle seems still to be acted on in some degree, and which I therefore mean to comment on, as well as the principle maintained by Mr. Lloyd and Mr. Norman, that a metallic currency is of that perfect nature, that the merits of every other may be tested by its approximation thereto—a principle which, as I have before stated, is decidedly at variance with the theory I have taken from Mr. Blacker's pamphlet.

I now bring forward the instance alluded to above, in which the opinions delivered by Mr. Palmer on the part of the Bank are condemned by the principles I have advocated, as well as those of Messrs. Lloyd and Norman, with which and with some general observations, I propose to conclude these remarks.

Mr. Palmer asserts in 1832, Question 173, that the issue of notes opposite Commercial Bills is the worst that can be made. Now if the principles quoted from Mr. Blacker's pamphlet are correct, namely, that a relative proportion ought to be maintained between the amount of the currency and the commercial transactions carried on through its instrumentality, how is this to be done in any manner so well as by restricting the issue to the discount of those bills which arise out of those commercial transactions?

I should have no hesitation in referring the decision of this question to the issues of the Scotch and Irish banks, and as they have a small note issue which entirely banishes specie from circulation, the evidence they would furnish must be unimpeachable. As people don't demand gold, it makes no difference in the argument whether they have a right to demand it or not; and as these banks have no Government dealings, and their issues are, it may be said, exclusively made in exchange for commercial paper; if these issues rise and fall according to the extent of mercantile transactions going on at different seasons, it would decide the point; and that this is the case I believe does not admit of a doubt. And to show that the increase of transactions is the true cause, the extension of the issues is the greatest in the two kingdoms at different periods according to the trade of each; but that this must be so, may likewise be proved by argument; for example, the proposition, I assert, is, that the *term* and rate of discount being given, the amount of the circulation will depend upon the mercantile transactions of the country, and will rise and fall with them if no other channel of issue is permitted.

To prove this it is only necessary to refer to the conduct of the Bank Directors themselves. They have admitted that to *shorten* the *term* of discount, or to raise the *rate,* will *lessen* the circulation—consequently, this admits likewise that the opposite course of lengthening the *term* and *lowering* the *rate* will increase the circulation, and they have accordingly acted in this manner when they did wish to increase their circulation. Now does it not follow from these admissions that, if all other channels of issue are cut off, the circulation of the country must be more or less according to the *term* and rate of discount adopted? It is in fact admitting, by their own conduct, everything I assert; and if, by the mere exercise of ordinary observation and intelligence, the Directors find out what term and rate of discount will produce such an amount of circulation as will, at the period of lowest demand for discount, keep their notes on a par with specie, they may then safely leave the increased transactions of a more busy period to draw out a further quantity without apprehending any depreciation; for if the issues increase, the transactions increase in the same proportion, and the relative proportion between the currency and the commercial transactions of the country is not thereby altered, and consequently the standard of value remains unchanged.

The same thing may be made to appear by another mode of reasoning, viz., supposing a National paper issued by National Commissioners, and they began by discounting at 2 months, and at 5 per cent. interest. It is evident that in the first instance the amount issued for a considerable time would exceed the amounts received from the payment of the bills coming due, which had been discounted by them; but it is equally evident that if they go on, the time will come sooner or later, that the receipts from bills falling due will equal the issues by means of those sent in for discount. When these two come to a steady balance, the circulation corresponding with the time of 2 months and rate of 5 per cent. is full.

How then are the Commissioners to force their issues beyond that point? The answer is given by the practice of the Bank of England Directors, who, in order to force out notes, have been uniformly obliged to advertise loans on *long* bills or at reduced *rates*, in order to take advantage of the increased circulation belonging to the change in the *rate* and *term* of discount they advertise at. Does any one suppose the Bank Directors would voluntarily offer the public their notes at ½ and 1 per cent. *under* the established interest, and upon the security of *long* bills, if they could have got the said public to take them at the rate previously existing upon the security of short bills?

I might have referred to the arguments adduced by Mr. Blacker in defence of his theory, but I have thought it better to avail myself of the actual admissions of the Bank of England Directors, which ought to settle the matter beyond dispute; and if so, how is it possible not to be struck with the unwarrantable interference with the currency by the Bank of England Directors, stated in an appendix to the report of the Commissioners of last session, No. 10, page 104, where it is stated that the Bank of England had advanced seventeen millions, a sum equal to the entire Bank-note circulation, without any reference to the commercial wants of the Kingdom whatever; and the fatal effects so soon following this conduct in the panic of 1836, renders it doubly important thoroughly to understand the fundamental principles which apply alike to the issue of all currencies, and peremptorily to enforce attention thereto. When we see men gravely asserting, as many of the witnesses before the Committee did, that the first duty of the Bank Directors was to attend to the preservation of the credit of the Bank, no matter what became of the credit of the public, it is time for the commercial interests to bestir themselves, and not to submit to such an anomaly as that a Bank, owing its existence to being the means of supporting and extending commerce and manufactures, should secure *that very existence by the destruction of both.*

It is scarcely necessary to say more than I have said in my first letter, to show the manifold imperfections of a metallic currency as a steady measure of value; for the quantity in circulation has no reference to the quantity of commodities or exchangeable transactions whatever. The mines may be more or less productive, and affect their value. Loans to other nations may take millions from our circulation, or they may raise the relative value of it, as the Americans did. Or suppose France chose to change her currency, and make gold a legal tender instead of silver; is it not plain that, in all these cases, the measure of value is totally changed, and can that be perfect which is liable to any such casualties?

In conclusion, I should wish to draw public attention to this evident fact, that every different stage in the advancement of commerce from the earliest ages down to the present time, has called for some corresponding facilities in the nature or management of the currency.

The cowries of the Niger may suit the local transactions of the countries where they are current; but where commerce is extended, the precious metals have always been employed, and have remained for a time the only medium of international remittances; but as trade extended further, bills of exchange soon superseded their necessity in this respect, and banks, bank-notes, cheques, cash credits, and last of all, the facility of the clearing-house, have each, in their turn, been either the cause or effect of the successive enlargement of trade and manufactures up to the commencement of the late war.

Every one will readily admit that it would be absurd to abandon those improvements in our monetary system which extended and promoted our trade and manufactures up to the period just alluded to, and to return to the limited facilities which a metallic currency formerly afforded; and if so, how does it happen that no one seems to take into consideration whether the monetary system then established, is suited to us in the stage we are now arrived at, when 25 years of peace have advanced our mercantile dealings to such an extent that individual houses have been under engagements for millions?—when the power of steam have brought all commercial nations into a closer contact than the different provinces of many kingdoms formerly were; so that the financial and mercantile transactions of each have an immediate bearing upon the other, and the transmission of bullion, which, for many years, cost 5 to 7 per cent., can now have a profit at about the tenth part of that charge.

I ask, therefore, if the improvements in trade from the earliest ages have required successive improvements in our monetary system, how can we suppose that the improvement of the last 25 years shall not require a corresponding improvement also? Other nations are now following in our wake; banks and bank-notes, with the usual extension of credit attending thereon, is fast spreading in every direction, and the issues being in the hands of persons interested in over issuing, the well-known consequences will, day by day, be more severely felt, and no degree of prudence in any one country, will guarantee its security from the ruinous panics which will take place in those connected with it. We have now, for some years, felt that some change in our monetary system has been wanting, and it appears evident we must either cut down our trade to a level with our currency, or raise our currency to a level with our trade, and free it from the control of external causes. It would seem that we have hitherto been cutting down our trade, if we consider the measures pursued by the Bank of England, but this cannot much longer be submitted to.

In the present state of things the issue of paper seems likely to be confined to some one establishment; and in whatever way this is arranged, such a publication of the accounts will probably be insisted on, that every transaction will immediately become known to the public. In this case it would never be tolerated, that the amount of the currency should be interfered with by such advances, either to Government or others, as have heretofore existed, even if the Bank of England was left, by a division of its duties, to be the party employed for this purpose; still less could such practices take place under National Commissioners, who would be uninfluenced by any motives of self interest under such circumstances. Therefore, it would appear, that if one issuing body is to be established, the interest of *all parties* would be best consulted by the establishment of an inconvertible currency under national commissioners; for example, Government might still have every reasonable accommodation from the Bank of England in return for its having the benefit of the national business, and would besides realise a large increase to the revenue.

Joint stock and private banks would also benefit, because they will be secure at all times of re-discount, when required, and therefore have no occasion to keep up the same extensive reserve funds in an unproductive state, and their right to issue their own notes will, according to the supposition, be lost in any case.

The Bank of England would benefit by the repayment of their entire loans to Government, which they would be free to make the most of, and they might retain the benefit of the Government business without any drawback therefrom, as at present.

Merchants and manufacturers would benefit, because every species of commerce and manufacture would then be relieved from the uncertainty of the money market, which now renders all mercantile transactions little better than gambling.

The operatives, above all others, would be benefitted, by being guaranteed against being thrown out of employment by the frequent recurrence of panics, the cause of which being by an inconvertible currency completely cut off.

Thus every class of the community would seem to derive advantage by a measure *which would relieve us from the effects of all external causes*, which (whilst we maintain a metallic basis) it does appear to me we never can be. A metallic basis is like an electric wire, passing through the hands of all nations, which communicates the shock from one to another, throughout the whole commercial world, no matter where it may first take place, and until it is laid aside we must be subject continually thereto.

If there is any reason or justice in these views, then the investigation of the self-regulating principle of the currency when the issue is confined to commercial paper alone, becomes a subject of the most intense interest, because it would afford a natural barrier to over issue, which, however, seems capable of being otherwise guarded against by taking the issues out of the hands of those who have an interest in the over-issuing, and by the unreserved publication of all transactions.

Trusting that public attention may be attracted to a subject of such infinite importance to the power and prosperity of these realms, I beg to conclude these remarks. A Retired Merchant.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—It would be esteemed a great favour by a constant reader of your very valuable publication, "The Farmer's Magazine," if some of your able and experienced correspondents would point out the readiest and most successful method of entirely extirpating that most troublesome weed, called in the north "*kale.*"

Its first appearance is exactly similar to the young turnip plant, and is well known by its yellow flower rising above the young blades of corn, and sadly disfiguring the appearance of many fields in the month of June.

Those persons whose misfortune it is to have their fields infested with it, know well its tenacity of existence; and when the industrious farmer, by the usual methods of fallowing and ploughing, expects he has got rid of this enemy, should his crop happen to turn out rather poor, he is sure to have his land covered with this most annoying and ugly weed.

If you could kindly oblige me by giving insertion to this, it may elicit the remarks of any who have been successful in destroying this weed, and will be very acceptable to, Sir,

Your obedient servant,
An Enquirer.

CORONATION;

WINNER OF THE DERBY FOR 1841.

Coronation is certainly a splendid looking animal, and of a truth has proved himself worthy of his sire: he has never yet suffered defeat; and we consider his winning with such perfect ease, though opposed by the largest field that ever appeared on Epsom Downs, a very great performance, reflecting the highest credit on his owner, jockey, and trainer. He was bred by Mr. Rawlinson of Chadlington, near Chipping-Norton, Oxfordshire; and was got by Sir Hercules (by Whalebone, out of Peri), out of Ruby (who was also bred by Mr. Rawlinson in 1825), by Rubens, out of Revenge's dam, by Williamson's Ditto—Agnes, by Shuttle—Highflyer—Goldfinder—Lady Bolingbroke, by Squirrel—Herod's dam. In 1840: At Oxford he won a Sweepstakes for two and three years olds, three quarters of a mile, beating Pelerine, 2 yrs., f. by Nimrod, out of Busk, 3 yrs., and Affection, 2 yrs., in a canter: and at Warwick won a Sweepstakes, T. Y. C., beating St. Cloud and Norman by a neck. In 1841: Won the Trial Stakes at Warwick Spring Meeting in a canter, beating the Plover (second), Protection (third), and the following, which were not placed: —Fitzroy, Naamah, Sunflower, Hatred, Syria, by Muley Moloch, The Star, and Hampton. At Epsom, ridden by Conolly (whose perfect recovery from "death's door" we are glad to notice) he won the Derby Stakes, of 50 sovs. each, half forfeit (144 subs.), beating Lord Westminster's b. c. Van Amburgh (second), and Ralph, Marshal Soult, Galaor, Belgrade, Joachim, Knightsbridge, Sir Hans, Cameleon, Palæmon, Monsieur le Sage, E. O., The Nob, Mustapha Muley, Mongolian, Protection, Cesarewitch, Finchley, Arundel, Canizzaro, ch. c. by Plenipotentiary, Gilbert, St. Cross, Ermengardis, Eringo, Hereford, Potentia, Negus Portsoken, who were not placed. At Ascot, for the Derby Stakes, of 50 sovs. each, h. ft., 13 subs., he walked over. He has an engagement at Bibury, and stands high in the betting for the Doncaster St. Leger, which, should he keep well, he is very likely to win. He was trained at Chadlington, by Painten, Mr. Rawlinson's private groom, who with considerable ability prepared him for all his engagements. His master is said to realize eleven thousand pounds, independent of the stakes by his winning the Derby. Coronation stands sixteen hands high, and has been thus ably described by a contemparary:—"He has a strong head; rather small eyes; his ears he keeps very perpendicular. He is very large in the cheeks; and tapers at the nose. His neck is (when in the stable, and not under the influence of the bridle) straight, but well set on, and clean about the throat. He rises high on the withers. His shoulders are powerful and oblique. He is deep in the brisket, and full chested. His arms are round and muscular, his knees large, but his legs and pasterns are inclined to be long. He has capital open feet. He is a round-barrelled horse, with arched loins; his quarters rather drooping, and the tail is low set on. His thighs and hocks are exceedingly large, and he is well furnished about his gaskins. In colour he is a good blood bay, and take him altogether, he is a remarkably fine animal. It is worthy of observation that in his walk he is as nimble as a pony."

Coronation

Winner of the Derby 1841

[illegible] Street [illegible]

A VIEW OF THE PAST AND PRESENT STATE OF AGRICULTURE IN NORTHUMBERLAND.

BY JOHN GREY, OF DILSTON.

(*From the Journal of the Royal Agricultural Society of England.*)

(Continued from page 11.)

Grass-seeds are universally sown by a drill which lays them with great regularity, and avoids all the inconvenience and unequal distribution occasioned by unfavourable winds in sowing by hand. It is drawn by one horse, and attended by a man who drives the horse with reins while he walks behind the machine and sees that all is going right. The horse walks in the furrow between the ridges, which keeps him in a straight course, and the machine sows to the middle of the ridges on each side, being constructed to sow 12 or 15 feet, as may be required, and to deliver various quantities of seed, according to the amount per acre wished to be sown. All descriptions of seeds intended for sowing are mixed thoroughly together, by frequent turning on the granary floor, before being carried to the field and put into the machine. A man and horse will easily sow 30 acres in a day on ridges of 15 feet wide. Seeds sown upon wheat are commonly rolled and lightly harrowed; those with barley are sown at the same time, *i. e.*, previous to the last turn with the harrow by which the seeds are covered, a roller following to leave a smooth surface. The seeds sown consist of a mixture of red and white clover, a little trefoil, perennial rye-grass, and occasionally timothy or Italian rye-grass and cocksfoot; in the portion intended for hay a larger quantity of red clover is introduced and less of some of the others; clover hay is thought to be improved for horse feed by a mixture of rye-grass, and it is more easily made. There is a description of perennial rye-grass grown in Scotland and Northumberland, which is considered preferable to Pacey's, on account of its producing more blade and less of the seed-stalk, which renders the pasture dry and barren during a greater part of summer; sheep eat it closer, and it is less exhausting to land. Where turnips form so important and cheap an ingredient of winter food, hay is not grown to a great extent, farm horses being fed, during a great part of winter, on straw and Swedes with oats. Old meadow-lands are scarcely known in this part of the country, and the hay that is made is from the first year's seeds —from one-fifth or one-fourth of the clover-quarter, as it may be—the remainder is fed by sheep, and in the next year the whole is used as pasture. From this circumstance the hay harvest is less considered here than in most parts of the kingdom, and I regret that I cannot bestow the same commendation in this respect as I have freely, but deservedly, given to the cultivation of turnips, for neither the operations of mowing nor of making hay are so well executed as elsewhere. It is true that the modes of making old-land and clover hay are, and ought to be, completely different. In one case it cannot be tossed about too much, or made too quickly; but in the other, to follow that practice would have the effect of shaking out the rye-grass seed, and breaking off and wasting the clover leaves, which are the most valuable and nutritious parts of it: it is, therefore, desirable to make new-land hay by turning it in the swathe entire from time to time, so as to spread it out as little as possible, and to get it quickly into large cocks and then into *pikes* or small ricks containing half a ton or more, so as to stand two or three weeks before putting it into large stacks. The custom of putting hay into *pikes* is, I am aware, condemned by amateur haymakers; still I am convinced it is the safest in the long run, in a climate so variable as ours, and where the hoeing of turnips at the same season requires so much attention. The whole of the hay intended to be put into a stack cannot be got ready in the same day; it is safe therefore to draw into pikes that which *is* made, that it may stand free from danger till the remainder be made too, so that all expedition may be used in finishing the stack when once begun. There is small consolation in having saved the expense of putting it in *pikes*, through the hope of stacking it in a day or two without, when a heavy rain causes it to be all spread abroad again and the process of drying to be repeated, with all the loss of quality attending it. If pikes are firmly put up, and in right form, it requires an excessive rain to penetrate more than an inch or two, which is not discernible in the bulk when taken down, and the hay thus managed is less apt to heat too much in the stack. To say that *pikes* are sometimes seen standing when they are black outside, and the clover has grown up around and is spoiling the bottoms, is only to say that some people are bad managers of their property, but is no valid proof of the impropriety of the custom.

The *sheep* stock are in the hill-district the improved Cheviot sheep, which are more hardy than the Leicester, and produce finer wool, and come sooner to maturity than the black-faced mountain sheep. The wether sheep are fatted on turnips in their third winter; the ewes are sold in autumn at four years old into the grazing districts in Yorkshire and elsewhere, where after feeding one set of lambs they are sent to the butcher. The Leicester sheep are the universal stock of the low grounds. They were first introduced by Messrs. Culley, about the year 1766, from the founder of that breed, Mr. Bakewell, of Dishley. Messrs. Thompson, Jobson, Smith, and other men of judgment and spirit, seeing their superiority over the old breed of the country called "mugs," quickly followed the example, and the custom of hiring rams becoming general, the old breed in the course of a few years entirely disappeared. The management of the flock has been pretty fully detailed under the head of turnip cultivation, with which it is intimately connected. The district is particularly healthy for sheep: it is reckoned that one-third of the ewes should produce twins, and in some situations one-half of them have been known to do so. They occasionally have three at a birth, but that is not desirable: 600 ewes on the farms of Milfield Hill and Flodden produced in one season upwards of 900 lambs; 33 of the ewes yeaned 100 lambs, viz., 32 three each, and 1 four. This flock had some rape in the previous autumn. After having three sets of lambs, the ewes are sometimes fatted at home, but mostly sold in September to other parts, to breed another set and then be fatted. The lambing time is in March and April; the lambs are weaned in July, and often taken to moors or rough pasture for six weeks, the change of land being considered healthful, for which keep from 2d. to 3d. per head per week is charged; they are brought home to fogs and clover-stubbles, and put upon turnips about the end of October. The gimmers are put to breed in the second year; the wether-hogs are taken more pains with during the winter than the gimmers, frequently having their turnips cut and getting a little hay, for the purpose of selling them fat as soon as they are turned out of the wool; they may at that time run from 17 to 21 or 22lbs. per quarter, according as they have been well kept. Such as have not had much care bestowed upon them are run again on pastures through the summer and sold in the autumn, or put upon turnips and sold fat at all times in the course of the winter, the weekly markets at Morpeth and Newcastle affording constant opportunity of doing so. The Leicester sheep of this county are generally very pure in blood, correct in form, and possessing great aptitude to fatten. Rams are occasionally introduced, by way of change, from the flocks of the distinguished breeders in Leicester and Nottingham, and many are also let yearly at good prices in this county, of which none hold a higher place than those of Mr. Jobson, of Chillingham Newtown. Attempts have, in some instances, been made to increase the size of Leicester sheep by crossing them with large and coarse rams from the Teeswater or old Lincolnshire breeds, but the experiment has generally proved disappointing, and in some instances extremely injurious, producing animals with inferior quality of wool and mutton, defective in form, slower in growth, and, after a few crosses, less in weight than the original. It may gratify the mistaken vanity of a farmer to obtain a larger price per head than his neighbour, but the price per head forms no criterion of his profits. The sheep is not naturally a large animal, and it is well known, as well as perfectly reasonable to suppose, that without forcing, and if left to their own feeding on light land, or on any land that is sufficiently stocked to be profitable, sheep of smaller size come to greater perfection and more early maturity than large ones. If an acre of land which will fatten four sheep of 25lbs. per quarter will fatten five of 20lbs., which there is no reason to doubt, the profit must be on the side of the latter; the quantity of mutton is equal, and so it may be presumed is the weight of wool; the smaller mutton is more valuable in the shambles, and it has been produced at less cost, because, if left to shift for himself, the smaller sheep gets sooner fat; he can gather as much food in a time of drought, or any other case of scarcity, as the larger animal, and it does him more good, so that he keeps his condition, or improves, while the other is losing or standing still. If there are markets where large joints sell better than those of moderate size, and situations where sheep depend almost entirely upon stall-feeding, then my reasoning will fall to the ground; but where flocks are extensive, and fed abroad on the pastures, I am strongly of opinion that it is unwise to obtain size at the risk of losing quality, and in a degree beyond what the kind of keep and character of the soil are calculated to maintain and mature. Excellent sheep are produced by the first cross between Cheviot ewes and Leicester rams, of equal weight with the Leicester and with finer wool; and in the intermediate lands between the mountains and low country, this mode of breeding is followed to a considerable extent It is proper to mix some young cattle in the pasture with sheep, as the one will often eat the grass which the other rejects. It is not easy to estimate with accuracy the comparative profit between the feeding of sheep and oxen upon grass-land, as, besides the quality of the land, the price of wool and the relative value of beef and mutton must be taken into account. I should say, however, that on all dry and loamy soils, if not of the richest quality of old grazing pasture, the advantage is on the side of sheep, and that land will produce more grass if grazed by sheep than by oxen. As sheep graze much closer than horned cattle, the pasture after them is always in a state to spring afresh, but in ox-pastures a considerable quantity of grass is allowed to go uneaten, and to attain a state beyond which it does not improve; just as a field of hay, when fit for cutting, would not improve if left uncut, although after cutting a large produce of aftermath comes up. This, however, may be considered more matter of speculation than certainty, and therefore irrelevant to our present subject.

The *cattle* of the county are essentially of the short-horned breed, although many are imported from the Scottish Highlands. This breed was early introduced from the stock of Messrs. Colling, and has superseded every other, as is the case in many counties. A reference to the "Herd Book" will show that the district contains many extensive and eminent breeders of short-horned cattle, who sell their young bulls and heifers at good prices, and into distant parts; and although individual specimens of equal merit may exist throughout England, in no part of it will the general stock in the hands of farmers be found better, or perhaps even so good, as in this. It is not a dairy country at all, and cows are kept only for family use and to produce calves, which are reared from the pail, and by means of linseed-meal, hay-tea, oilcake, &c. Three calves are generally reared for each cow that is kept. In some cases, where extensive pastures of rough and poor land are connected with a farm, it is not unusual to breed cattle by crossing West Highland heifers with a short-horned bull, allowing the calves to suck till they are of age to be weaned, and then fattening the cows for the butcher. These two breeds, though suited to different climates, pretty much resemble each other in quality, being the best for their respective localities, as I believe, that anywhere exist; and when the parents on both sides are pure in blood and well selected, the produce rarely fails in combining the excellences of both. That well-known breeder, Mr. Thomas Bates, when in Northumberland, brought this cross to great perfection. The calves in either case are kept during the first winter in the straw-yard, with a moderate allowance of turnips daily; but in situations where much loss has been sustained by "quarter ill," or "black leg," as the sudden mortification is sometimes called, with which cattle at that age are frequently seized in the limbs or back, a little oilcake and hay are substituted for turnips with good effect. A constant supply of rock-salt in their mangers is, I am inclined to think, of great use in this respect.

In the next summer they have commonly an inferior pasture, or are put among the sheep to eat up the coarse grasses which they refuse: during the second winter they get turnip-tops, and towards the spring turnips with straw. A better pasture is allowed them next summer, and in autumn they are put into open folds to full turnips, coming out in the spring months fit for the butcher, and weighing on an average about 70 stone of 14lbs., although many steers of three years old are seen in the months of April and May, at Wooler and other places of sale, from 80 to 90 stone; the heifers are generally about 10 stone less, and this with a very small quantity of cake in the last six weeks of their feeding. In some cases it is found more profitable to push the young cattle forward in the second year than to keep them till the third, in which case cake is indispensable from the month of January or February at latest. In the spring of last year Mr. George Grey sold a lot of steers, two years old, grazed on my property on the Tweed, for 21*l.* each, weighing 62 stone; part of them were a cross from a short-horned bull and West Highland heifers, and not quite so heavy as the pure short-horns. It would have required good food to make them pay for keeping another year. A large and good breed of cattle existed in this county long before the present race was introduced from Durham, which attained immense weights. The two famous oxen bred and fed at Howick by Sir Henry Grey weighed above 150 stone each, of 14lbs.; and a heifer 132 stone (the beef only), but then they were seven years old. Oxen are not allowed to attain such venerable age, the object of the breeder being to obtain early maturity in an animal which lays its beef upon the most valuable parts and produces least of coarse meat and offal. The custom of keeping animals tied by the head in stalls, during the whole time of their being fatted, is quite abandoned; and they are put in folds in small numbers together, having well-littered sheds open to the south to lie in, and the power to walk about at pleasure. The custom of ploughing with oxen is also exploded.

The horses used in this district are below the size of draught horses in general, short and clean-legged, with small heads, light necks, and thick middles, capable of enduring long journeys and great fatigue, though not of moving such heavy loads as some others. The real black cart-horse, with thick legs, round quarters, and heavy shoulders, though capable of throwing great weight into the collar, would cut a poor figure after going in the plough making turnip drills for ten or eleven hours a day, in the warm month of June, at the top of his walk. The lighter and more nimble horse, which moves quickly and with little trouble, is much more fitted for the great exertion required of him in turnip cultivation. A pair of such horses in preparing turnip-land will plough 1½ acre, and in large fields where the turning is less frequent, two acres a day for days together; but the pace common in making and splitting the drills in seed-time is still more severe, although the work is not so heavy. Each farm has one or two pairs of a heavier description for carting corn to market, carrying coals, &c., which horses have frequently to travel from 30 to 40 miles in a day when delivering corn to the seaports.

The implements are such as are used generally in the south of Scotland: threshing machines are universal. In a country with an undulating surface and well supplied with streams, a supply of water can often be obtained for working a machine, to which it is usual to add a pair of common mill-stones, to bruise corn for horses and pigs. When water cannot be had, steam is now in general use: the winnowing process is also worked by the water or steam-power, in connexion with other machinery. For carrying corn and hay long carts are used, which are commonly drawn by two horses at length, and sometimes by one: they are close at bottom, but with railed ends and sides, and very light: for carrying loads upon turnpikes the single-horse Scotch cart is used. One man drives two at once, the horse in the latter being fastened by a light chain attached to the former, and joined to a broad belt round his neck. The carts used on the farm are of the same construction, but larger, and with movable bodies, so as to set up for the purpose of turning out their load at once, and with an additional sideboard to put on, for carting manure, turnips, and any bulky article; the wheels and axles of these are changed at pleasure to the harvest carts; for as the farm horses cannot occupy both carts at once, a double set of wheels and axles is unnecessary. The question has often been discussed as to the relative draught between one-horse carts and waggons, and many circumstances tend to decide in favour of the former, such as the lightness of the carriage, the smaller degree of friction from the division of the loads into several parts, the necessity for each horse doing his own work instead of imposing upon his neighbour, his nearness to the load, and the saving to roads: but, independent of this question altogether, the great superiority of such carts where quick motion is required, turning, loading, and unloading, and especially the conveying and depositing manure in turnip drills, and in carting off turnips, as already described under their respective heads, must be acknowledged. And as the same, or some of the same which are employed upon the farm, may also be used when required upon the roads, the saving of a double set of carriages, even admitting some inferiority in one respect, would fully warrant their use.

The plough is the Scotch iron swing plough, drawn by two horses abreast, the man who holds the plough driving them with reins, but chiefly by speaking to them. Ploughs with wheels to regulate the depth of the furrow have never been used, and in many parts the inequality or stonyness of the surface would operate against them; the argument, however, against their introduction, that they form a nursery for bad ploughmen, is not very wise, if it can be proved that an inferior ploughman can make as good work with them as an expert one can do with the others, and with greater ease to his horses. We did not oppose the introduction of threshing machines as an improvement upon the old mode because it would take the flails out of hands which were expert in the use of them; and as all ploughmen are not good ploughmen, we ought not to deny the farmer who happens to have indifferent ones the means of remedying the evil. Any unnecessary and injudicious pressure upon the handles of the swing plough operates in a greatly-increased degree upon the draught at the end of so long a lever—this the application of the wheel will correct; at the same time some addition to the draught may be created by the friction upon the wheel; it is therefore still doubtful on which side the balance of advantage may be found. I am of opinion that the wheel plough is not so applicable to the hill-sides and uneven surface of Northumberland as to many other districts; but the investigation is a very important one, and I rejoice that it has attracted due attention and been undertaken by such able hands. One improvement has often struck me as being obvious, without reference to the question of the comparative merits of swing and wheel ploughs at all. The mould-board, which is adapted to turn over and lay at a proper angle the tough grass furrow, is not the best suited for working in loose land and deep ploughing in fallow; in the latter case the draught is rendered unnecessarily great by the load of earth, especially if the land be damp, which hangs upon the breast of the mould-board instead of slipping easily off it; and even in sandy or very light soil, when horses might be expected to enjoy comparative ease, they seem to be harder pressed than ever on this account. Now without going to the expense of maintaining two sets of ploughs for different kinds of work upon a farm, it would not certainly require any unusual degree of ingenuity to contrive a mode of adapting and fixing by screws mould-boards of different casts, and suitable for each kind of work, upon the same plough.* The subject, however, is well deserving of consideration.

The drill for sowing grass seeds is an important improvement (by its equal distribution of the seed over the land, its capability of sowing in any wind, and its lightness, with which a man and horse can easily sow thirty acres a day) over the old plan of sowing by hand, which was obstructed by wind and rain, and where one patch would be found much too thick and another destitute of plants, so as to leave a good deal of land unoccupied. It is not possible to ascertain the fact with precision, but I do not hesitate to state an opinion, that land sown by such a machine will produce more hay, and graze a greater quantity of stock, than that left in the patchy condition which follows the unequal distribution of small seeds by the hand, subject always to the fitful influence of the winds. Corn-drills are not in general use, because the land is well cleaned for the turnip crop, and unless for the extirpation of weeds, broadcast sowing produces more corn, the land being more equally accessible by the roots, which draw nourishment from all its parts; whereas in drills they are clustered in narrow rows, and the ears are less regularly exposed to the sun, especially if the drills lie from east to west. Rollers, scufflers, scarifiers, and other implements, are much the same as those found in other districts; the double turnip-drill with rollers, sowing two rows at once, is universally used.

Manures.—Lime of good quality for land is found in several parts of the district, and may be had at a distance of ten miles from any part of it, although it is carried to double that distance into the adjoining counties of Roxburgh and Berwick. It is not applied like dung at every fallowing, but once in 10 or often 15 years, and then in quantities from 160 to 240 bushels per acre, either spread upon the land intended for turnips, or ploughed in during the previous autumn or spring. After frequent repetition the effects of lime become less apparent, but at such an interval they are generally to be seen, especially in producing a better take of grass seeds and a more nutritious pasture. On its first application to lands newly taken into cultivation, and containing abundant vegetable matter to work upon, the effects of lime are remarkable. An anecdote illustrative of this is related in Messrs. Bailey and Culley's Report of Northumberland, in 1797:—"About twelve years since, when looking over the farm of Thornington (the same which is now occupied by that eminent breeder of short-horned cattle and field horses, Mr. Hunt), we were surprised by a sudden alteration in the verdure of the land; one side was eaten very bare, and covered with a thick mat of clover and ray-grass; the other was a dingy brown, chiefly composed of *small bent* and *sheep's fescue*, and in a great measure neglected by the stock. An explanation was required for so great a contrast, and Mr. Hall, the tenant, informed us that when that field was last in fallow the part which was eaten so bare and looked so green was *well limed*, but the other which was left uneaten had never been limed." I have seen various instances of a similar effect from the use of lime upon fresh soils —land that has laid long in grass will produce excellent crops of turnip and rape with lime alone, but on old tillage-lands the stimulus is not so effective, and the use of other manures is requisite. In turnip-fallows it is of consequence to have the fold yard manure in a state of active putrifaction when applied; for which purpose it is removed at intervals, chiefly in frost, when ploughing is laid off, to situations in the fields most convenient for being taken to the land for which it is intended, and is turned over a few weeks before being applied, except such part as remains in the fold-yards for land near at hand, which is turned up where it lies. Great pains are taken to make the quantity as large as possible by cutting the corn low, and collecting everything to increase the bulk of the dung-heap. Where turnips abound, comparatively little straw is eaten by cattle, and the great proportion being trodden down as litter gives a large return of manure, so that if the straw of the previous corn crop has been bulky, in many cases sufficient dung is made on the farm to go over the fallow or turnip quarter; but, generally speaking, the fold-yard manure is applied to lands nearest the offices, and those from which it may be most convenient to draw a considerable portion of the turnip crop, leaving those which are distant, or steep, or in any way less easily come at, to be done with bones, the portability of which, and their easy application on hill-sides and distant parts where dung cannot readily be conveyed, render them a most valuable accessory to the dung made on the farm, and have had the effect of extending the breadth of turnips, and of cultivation generally, in a considerable degree. Few other adventitious manures besides bones are used in the turnip district, although near the coast those obtained by importation are in partial use. Compost heaps made of the scouring of ditches, road-scrapings, &c., are common here as elsewhere; they are always mixed with lime, and would be much improved by some layers of salt, the chemical combination being highly beneficial. The successful experiments which have been made with nitrate of soda have led to much inquiry respecting it, and its use will next year, I suspect, be greatly increased.

The foregoing remarks and details, though under the head of turnip cultivation, are in so many respects applicable to the stronger soils upon the east coast, that little will require to be said of them, except in as far as the management differs from that hitherto detailed. The implements are the same; the horses somewhat heavier and slower in their movements; the breed of cattle is the same, but where the quantity of summer grazing exceeds the winter keep from want of turnips, cattle are bought in the spring, made fat upon grass, and sold in the autumn.

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* Mr. Hart, of Wantage, has lately made a plough with two shifting mould-boards of different shapes, adapted to different qualities of land, in agreement with the opinion of Mr. Grey.—Ph. Pusey.

And where land is unsafe for keeping a regular breeding flock, from its liability to rot, cast ewes from the higher country are bought in autumn, and after fatting their lambs are again disposed of. Most farms even in this district have portions of land which grow turnips, and are cultivated in the five-course rotation previously described, although their produce in turnips is not so certain as that of Glendale and the borders of the Tweed. By the progress of tile-draining much land is now being brought under turnip cultivation and the five-course rotation, where it could not be attempted before; and a great inducement exists to favour such attempts, as will be seen by the comparative rise in the value of loamy and of clay lands in the early part of this paper. Many fine grazing pastures in the eastern part of the county were converted into tillage, when the exorbitant price of corn during the continental war, and their capability to produce several crops in succession, formed a temptation to farmers to offer, and to landlords to accept, high rents for them. This step has been generally repented of, as it is a short process to break up an old grass pasture, but the work of many years to restore it. They are still found, however, in many parts with large ridges, high in the centre, and shaped like the letter S, and generally occupied in connexion with the adjoining tillage-land, as at Howick, Embleton, Tuggal, &c., but they are not unfrequently let by auction in the spring to be depastured from May-day to Christmas, as at Haggerstone, Lowlin, and various other places, bringing a rent for those months of from 3*l.* to 5*l.*, and even to 6*l.*, per acre.

The rotations pursued on the best wheat lands are either the four or the six-course; both requiring good land and abundant manure to maintain them in any degree of vigour, and now in many parts given up for the introduction of a more gentle course, with more of grazing and stock; the four-course is, oats, fallow well dunged, wheat, clover with a light mixture of rye-grass on half the land, and beans, or beans and peas mixed, on the other half. By so alternating them, the clover and beans come each only once in eight years, and are of surer produce, especially the clover, which does not bear frequent repetition. The six-course is, oats, beans drilled and hoed, wheat, fallow, wheat, clover. There is another course, which, though it may not be very common, I consider applicable to a kind of land which, without being a stiff clay, is much too strong and retentive for growing turnips, and if grown, for taking them off without injury; and as I have pursued it for 21 years with success, I feel myself more at liberty to recommend it to public notice. I was induced to take into my own management, though at an inconvenient distance from my residence, an estate of my own on the banks of the Tweed, which had been long subject to a severe course of wheat-growing, and was in consequence in an exhausted condition. One part of the farm consists of strong turnip-loam, which I immediately divided into five equal shares and managed in the five-course rotation, growing turnips in the regular course; the other consists of heavy land upon a retentive subsoil; this I divided into seven shares, planting some additional hedges to make the necessary equal divisions, and introduced upon it the following rotation:—oats, beans drilled and hoed, barley, naked fallow with dung, wheat, grass, grass; my object in making this arrangement was to obtain two years' grazing, to recruit the land after over-cropping with corn, to keep a repetition of the same kind of grain as distant as possible, and to introduce a barley crop, which was quite new to the land, and which it was considered incapable of producing. With this, however, I had no difficulty; for although such land, if ploughed in the spring, would have turned up a stiff furrow, and when worked would have been cloddy and in a state most unfavourable for barley, yet, when ploughed into ridges after the beans in the autumn, laid as dry as possible, and exposed to the winter's frost, it never failed, by watching an opportunity to sow it when dry, to harrow down as mellow as possible, and to produce excellent crops; nor did the grass seeds fail as they had been wont to do. The produce of the farm was quickly doubled, and although rents had fallen generally during the years that I occupied it, it has advanced in the interval from 500*l.* to 800*l.*, its present rent. The land had a good quantity of dung at each fallowing, and a good liming during the first course, which was not repeated till the third, fourteen years after. If the beans should be removed sufficiently early, and the autumn be dry enough, I should prefer to apply the lime after the bean crop to any other time; both because the dung is spread upon the fallow, and because after the beans, the land contains in their roots, and in the kind of putrid fermentation arising from the decay of vegetable matter in a drilled crop, more material for the lime to operate upon; but as beans stand late upon the ground, it is only in some seasons that this can be effected so far north.

Farm servants are engaged on the large farms in the northern parts of Northumberland, as in the southern counties of Scotland, in a manner very different from that of the same class in the more southern counties of England; and as the custom is little known in many parts, and has evidently a great influence upon the moral and social condition of the labouring classes, as well as being in a great measure essential to the system of turnip-husbandry, which gives so much occupation to females and young people in cleaning the land, gathering and burning couch, and hoeing turnips, I consider it deserving of particular notice. To conduct the operations of a turnip farm in summer, and to keep at work an expeditious thrashing-machine in winter, without laying all the ploughs on the farm idle, when many hands are required for untying and carrying forward, to the man at the feeding board, the sheaves before being thrashed; and for removing and dressing the corn as it comes from the winnowing machine—a description of work which women are quite adequate to—several hands are necessary besides the every-day labourers on the farm. In the absence of villages to supply occasional assistance, as is the case with a large portion of the farms in the district, each one must depend upon its own resources. A necessity is thus created for having a certain disposable force of women and boys at command, which has given rise to the custom of having no ploughmen or labourers living in the farm-houses. Each farm is provided with an adequate number of cottages with gardens attached, and every man who is engaged by the year has one of these cottages; his family, however numerous, commonly finds employment, but *one* he is *bound* to provide, to answer at all times his master's call, and to work at stipulated wages. To this engagement the odious name of *bondage* has been given; and I am induced to notice it the more particularly because it has of late years attracted attention, and because attempts were made a few years ago to stir up the hinds, as such hired householders are called, to a resistance to the measure. These attempts were, to a certain degree, successful, and resistance was made by the hinds to being *bound* to provide a girl, or boy as it may be, to work on the farm, but it was not yielded to by the farmers in any one case that I know of, except one, that of Mr. Jobson, of Chillingham Newtown, whose local situation rendered him independent of it; he hired his men at certain wages, with regular employment for the year; and, singular enough, before the end of it they one and all desired to be placed on their former footing. Where the hind has one daughter or more there can be no hardship, because, when called to work out, which, during the summer months, is pretty constant, she is earning wages; and when she is not so employed she has the domestic occupation of the family to engage her. In the case of a hind who has no children sufficient for the purpose, there may be hardship in having a servant to hire, provided her services are not required at vacant times in his family. But even then, where is the hardship in the case? If the advantage of the system be not equivalent to the hardship complained of, why does he not abandon it and betake himself to a more independent life, hiring a cottage in a village and taking his chance for piece-work, in the quantity of employment which is to be found in draining, embanking, fences, roads, &c., throughout the country? And why should that be called *bondage* which is an engagement for a year, terminable by either party at the end of it? The fact is, that the certain employment and the wages of the hind, and his settled condition and abode, give him many advantages over the labourer who has to seek work by the piece or the day, in different parts, even when wages are good and work is plentiful; and it invariably happens after a hard winter, when labourers have been laid off work in snow-storms, that many of them seek to be engaged as hinds in the ensuing year. It cannot be said that the occupation of the females is unwholesome, or beyond their strength. The healthful and cheerful appearance of the girls in the turnip or hay-fields of the north, and their substantial dress, would bear a favourable comparison with those of any other class of female operatives in the kingdom; and their neat and respectable attire on attending their places of worship on Sundays would fill with astonishment, and perhaps envy, the female peasantry of Kent or Surrey.

Having so far explained and vindicated the system, I cannot perhaps better show its operation and effects, and bring the subject to a close, than by inserting a letter, which at the request of a friend I was induced to publish, along with others on agricultural subjects, in 1831, which letter contains the substance of evidence given by me in that year, before a Committee of the House of Lords, on the condition of the labouring poor.

"The manner of hiring and paying hinds or farm-servants who are householders, in the north of England, is as follows:—

"Each man is provided with a cottage[*] and small garden upon the farm, free of rent, for himself and family; several of whom, in many cases, are engaged *for the year* upon the farm as well as himself. The wages of the hind are chiefly paid *in kind*; those of his son or sons, if he has any able to work, either in money or partly in money and partly in grain, as best suits his convenience; but it is generally an object with him to have such a proportion of the earnings of his family paid in kind as will keep him out of the market for such articles as meal, potatoes, cheese, bacon, milk, &c.; and notwithstanding what the economists say about money being the only proper medium of exchange for labour, as well as other things, the custom of paying farm-labourers *in kind* works well for both master and servant. In times when grain sells at a high price, the conditions of the hind will cost his master more than the ordinary rate of wages for day-labourers at the same season; but, on the other hand, in times of great depression, the conditions are the same, though at such times the farmer would be compelled to sell nearly double the produce to enable him to pay his labourers in cash. He has also a benefit in paying for his labour in an article which otherwise would cause him some expense in sending to market, and in disposing of which he might incur the risk of making a bad debt with his corn merchant.

"The conditions of a hind (I adhere to the local term) vary with the price of grain from 30*l.* to 40*l.* a year; and, at the present prices, are as under:—

	£	*s.*	*d.*
36 bushels of oats	6	12	0
24 do. barley	5	12	0
12 do. peas	3	0	0
3 do. wheat	1	5	0
3 do. rye	0	15	0
36 to 40 do. potatoes	2	14	0
24lbs. of wool	1	0	0
A cow's keep for the year .. £8 to	9	0	0
Cottage and garden	3	0	0
Coals carrying from the pit	2	0	0
Cash	4	0	0
	£38	18	0

In 1811, 36*l.*[*]

Each hind being bound to supply the labour of one woman (or boy) whenever the farmer requires it, at 1s. per day in harvest, and 10d. per day at other seasons. The other females of the family receive 10d. or 1s. a day generally, and 2s. 6d. in harvest.

"The food of the peasantry in the north of England, as in Scotland, consisting chiefly of porridge made of oatmeal with milk, for breakfast, and bread, made of barley and pea-meal mixed, regulates the above proportions to the demands of a family. Were the same mode adopted in the southern districts, although they could not probably get a more wholesome food, yet the kinds and proportions of grain would have to be regulated by the taste and habits of the people. These 'conditions' are proved, in innumerable instances, to be adequate, under a proper economy (which economy the system has a tendency to produce), to the support of a man, his wife, and any ordinary number of children; for the eldest are probably earning, at the same time, from three or four to eight or nine shillings per week; and the joint produce of their labour, under the management of a frugal housewife, renders their cottage a scene of comfort and contentment. It often happens, indeed, that a hind with but few in family has, at the end of the year, a good deal of corn to dispose of, for which, of course, his master is always willing to give him the market price.

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[*] Many old cottages in the country were justly deserving of condemnation; but a laudable attention to the subject of late years has had the effect of adding much to the comfort and accommodation of the dwellings of the poor.

[*] In addition to the above, the steward on the farm receives 6*l.* or 7*l.* extra; and the shepherd has, besides, several sheep kept, of which he sells the produce, thereby possessing a particular interest in the safety and welfare of the flock.

"The grain given to the hind is always of the best that the farm produces. He is paid in advance, at the beginning of each quarter, a fourth part of his conditions. It is sent to one of the many small mills which abound in the country, and ground at a cheap rate into the different kinds of meal; and thus the intermediate profits of retail dealers, meal-sellers, and bakers are saved to the consumer; and the corn, which would cost the farmer 16*l.* to pay his hind, is more valuable to the latter than 20*l.* paid in money wages, to be expended in stones of meal or quartern loaves at the end of each week. One very obvious benefit arising to the hind from this mode of paying in kind, besides that of having a store of wholesome food always at command which has not been taxed with the profits of intermediate agents, is the absence of all temptation, which the receipt of weekly wages, and the necessity of resorting to a village or town to buy provisions, hold out, of spending some part of the money in the ale-house which ought to provide for the wants of the family; and to this circumstance, and to the domestic employment which their gardens afford in their leisure hours, we are probably much indebted for the remarkable sobriety and exemplary moral conduct of the peasantry of the north.

"The produce of his garden, his small potatoes, and the refuse of his dairy, enable the hind to fatten two pigs in the year. The keep of a cow, supplied entirely by his master, consists of pasturage in summer, and a ton of hay, or an equivalent in turnips, generally ten cart-loads of white turnips, or five of white and three of Swedes, and as much straw as he chooses in winter. This is reckoned to cost the farmer eight or nine pounds; but if the cow be a good one, it is evident that the advantage must be much more than that to a family. The calf, if early in the season, sells for forty shillings, or thereabouts; if later, perhaps for thirty shillings; and if the good wife be a frugal manager, she will sell forty or fifty shillings' worth of butter, besides an ample supply of milk and cheese for the use of the family. The wool received gives employment to the females to spin, and knit it into stockings in the winter evenings, or it is sent, after being spun into yarn, to be made into blankets. In this way habits of industry and economy are promoted, and domestic and social virtues engendered and preserved, in a manner and to an extent unknown in those districts where the younger members of a family are early driven from the shelter of their paternal roof and the control of a parent's eye; or where the parents, deserted by their children, are forced to take refuge, under the infirmities of age or the pressure of want, in the corrupting atmosphere of a parish workhouse. Look into one of our north-country cottages during a winter's evening, and you will probably see assembled the family group round a cheerful coal-fire—which, by the way, is an inestimable blessing to all classes, but chiefly to the poor of this country,—females knitting or spinning—the father, perhaps, mending shoes—an art almost all acquire—and one of the young ones reading for the amusement of the whole circle; and contrast this with the condition of many young men employed as farm-servants in the southern counties, who, being paid board-wages, club together to have their comfortless meal cooked in a neighbouring cottage, with no house to call their home, left to sleep in an out-house or hay-loft, subject to the contamination of idle companions, with no parent's eye to watch their actions and no parent's voice to warn them of their errors; and say which situation is best calculated to promote domestic comfort, family affection, and moral rectitude.

"The possession of a cow is to the northern hind an object of endeavour and ambition. He cannot marry and establish himself in life without one: at least he knows that he ought not to marry till he can purchase one—and this is the first step towards independence that is generally aimed at; salutary alike as a check and a stimulus. This point gained—a cottage respectably furnished, and a situation obtained under a good master—he brings home his bride; feeling that he is a useful and, comparatively, an independent man. The situation of a hind living upon the premises, and hired for the year, possesses this decided advantage—that in seasons when employment is scarce—when day-labourers are turned adrift—however unproductive his services may be to his master, his wages go on—even months of confinement from ill health produce no diminution in his income;—and thus it is, that though his wages per day may seem but small, yet, at the end of the year, he is found in better circumstances than those artisans or labourers by the piece, who, though obtaining nominally higher wages, are liable to much loss of time and uncertainty of employment. It may seem hard at first sight, that the farmer, whose servant, after having entered upon his service for a year, has fallen ill and become unable to work, should still have to make good his bargain; but such is the custom; and were it otherwise, the family would soon, in many cases, be thrown on the parish funds. The farmer may as well then take the chance of supporting his own for a while as be compelled to contribute to the support of all who might fall into similar circumstances throughout the parish. But by far the best reason for the custom is, that it gives rise to a feeling of gratitude to a master for having afforded gratuitous relief, and a desire, which I have often heard expressed by servants, to make up for the loss he had sustained by the best services they could bestow; and surely the sacrifice is not too great, if it saves an honest man from the feeling of degradation, which ought, and still sometimes does attend the application for parochial support.

"This mode of engaging and paying farm-servants is not only more conducive to their welfare and social comfort than the weekly payment of money-wages, which go but a little way in purchasing the necessaries for a family—are injudiciously laid out, and sometimes wastefully squandered—but it has besides a strong and apparent influence upon their habits and moral character; it possesses the advantage of giving to the peasant the use of a garden and a cow, with the certainty of employment; it gives him a personal interest in the produce of his master's farm, and a desire to secure it in good condition; it produces a set of local attachments which often lead to connexions between master and servant of long continuance. It is not a comfortable or convenient thing for a man to move from place to place with his furniture and family; and, when he finds himself well situated, he has a strong inducement to conduct himself respectably, and give satisfaction to his employer. While, on the other hand, such removals being attended with expense and loss of time to the farmer, who always sends his carts to bring the family and furniture of a new comer, it is his interest to encourage and retain a respectable servant; and thus mutual accommodation and respect are produced. Orderly habits and respectable conduct on the part of the servants produce consideration and kind treatment from their masters; and in this way the great majority of this class of our population come to the end of their days without having once suffered the degradation of being on the list of parish paupers.

"Perhaps the foregoing statements may be best proved by annexing a list of the servants, being householders, at this time resident upon a considerable farm[*] in Northumberland, with a table showing the length of time that each has lived under the same master, and the sum of money that remained due to each at the half-yearly settlement of their accounts at Martinmas last (11th November), being a surplus, arising from the labour of all the members of the families who remained at home, which they had not found it necessary to call for in the course of the half-year, but left in their master's hands till the final settlement of the half-year's account:—

	Years' Service.	Cash due upon his account at Martinmas. £.	s.	d.
Geo. Cranston	25	8	3	6½
Alex. Tunnah	12	15	0	4½
John Redpath	1	9	7	11½
Sam. Ewart	30	5	5	9½
Andrew Gray	9	7	14	4½
Andrew Elliot	14	23	2	2
Thos. Robson	4	4	3	11
Jas. Cranston	20	6	12	4½
Andrew Young	12	7	2	5½
Edw. Davidson	15	5	15	1
Geo. Chirnside	10	5	16	7
John Middlemas	3	4	9	10½
Thos. Fullerton	18	in debt to — his master.. £. 7	s. 9	d. 8

Average 13 years.

"In the case of Thomas Fullerton, who, instead of having money due to him, stood indebted to his master in the sum of 7*l*. 9s. 8d., it is necessary to remark, that he had had the misfortune to lose a valuable cow by death; and being unable to purchase another, having a large family, was favoured by his master with the loan of 10*l*. to enable him to do so, which loan, it is understood, he is to pay off by instalments, or as he can afford; which, as his family gets up to be useful, he will have it in his power to do. The existence of this kind of confidence and accommodation may be adduced as one of the beneficial effects of the system herein explained. A master, in such case, frequently gives the servant the use of one of his cows until he can procure one for himself; but the servant is always anxious to have the credit of having a cow of his own, and it would be absurd not to give every encouragement to the maintenance of so laudable a spirit.[*]

"It may further be worthy of remark, that only two in the foregoing list ever received parochial aid—one, John Redpath, who was disabled by illness from working for nearly three years; and George Chirnside, whose father died, leaving a widow and four very young children, of whom he was the eldest; but since the time that he was sixteen years of age, the whole family have been supported by their own industry. He was at first assisted by his master in the purchase of a cow, which is now cleared off, and the family are in good circumstances.

"In contrasting the condition of the peasantry in the southern with that of the northern parts of the kingdom, it would be highly improper to pass over unnoticed the superior education of the latter, and the effect which is produced by it upon their worldly circumstances, as well as upon their moral and religious character. No greater stigma can attach to parents than that of leaving their children without the means of ordinary education, and every nerve is strained to procure it. In the school attached to almost every village, one finds children not only able to read and write at a very early age, but most expect in all the common rules of arithmetic, and not unfrequently capable of extracting the square and cube root with great expedition and accuracy. And even the young men who labour in the fields all the day often spend a couple of hours in the evening in school, to advance themselves in such acquirements. If occupation alone is a valuable antidote against idle and vicious habits, the acquirement of useful knowledge and the cultivation of the mental faculties must be still more so. And when these are prosecuted, not by gratuitous means, but by the produce of economy and toil, it bespeaks a state of society where sobriety is habitual, and intelligence is held in estimation."

Farm Buildings.—In consequence of the abundance of stone which the county everywhere affords, the buildings are all of a most substantial kind—brick being only used for chimnies and inside partitions. Blue slate from Wales or Westmoreland forms the universal covering of all buildings of recent date, and the homely thatch and unseemly red tiles are now the exception, though within the last sixty years little else was to be seen. Roofs of gray sandstone-slate are occasionally met with, but although they are more agreeable to the eye than red pantiles, they are much inferior to blue slate on account of their great weight, their porous character, and the steeper pitch which they require. During that period a large proportion of the farm offices in the districts treated of have been rebuilt, the old, insufficient, and patch-work accommodation of the former age having been replaced by buildings at once substantial and commodious, suited to the increased produce in corn and to the equally great increase in both the number and quality of live stock consequent upon an improved system of husbandry. The custom of letting farms on long leases has tended much to the improvement and perfection of farm offices. A tenant for a short or uncertain term puts up with such accommodation as the place affords, or as he can obtain at the smallest cost and inconvenience for the present time; but the tenant who is entering upon a lease for twenty-one or nineteen years, calculates the advantage which he would derive, and the labour he would save during that term, by having a set of offices more snug and more commodious for his cattle; more compact in form or more central in situation; in consideration of which he undertakes to convey (or *lead*, as the term is) all the materials for a new building, the landlord being at the cost of it in other respects; and in this way old and incongruous buildings are demolished and new ones erected convenient in arrangement and situation.

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[*] "In the township in which the farm referred to is situated, the poor's and county-rates amount to 1s. 3d. per pound per annum on the rack-rent. The greatest portion of the poor's-rate, however, is occasioned by the inhabitants of a village, containing some tradespeople and artisans, who obtain settlements by servitude or occupation; and a very small proportion indeed by the agricultural population. The writer never knew an instance of a regularly-hired farm-servant, or hind, applying for parochial aid in time of health, however large his family; and though, in the case of widows and orphans, assistance must be given, we would say that in townships where the population is purely agricultural, 6d. in the pound would cover, on an average, the amount of the poor's-rate."

[*] *Cow-clubs* are now established in various parts, to purchase cows for the members who have the misfortune to lose them. The farmers subscribe according to their number of hinds, and each hind, to enjoy the benefit, subscribes 1s. per quarter.

In selecting the site of farm-offices it is desirable to combine in the greatest degree which circumstances admit of, the following objects:—proximity and easy access to a public road; a situation central, as regards the tillage-land, and so as to communicate with all parts of it by the levellest roads possible, as the intervention of a single hill that could be avoided may make the difference between two horses in a cart and one. A southerly aspect; as cattle are found to thrive better and to fatten sooner in folds open to the sun than in those from which his rays are excluded. A command of water; so that a supply may be conveyed through the different parts of the buildings, and if the grounds afford it in sufficient quantity, where it can be brought and collected to work the thrashing-machine, and thence conveyed away, with little expense and without injury, or, it may be, with benefit to the adjoining lands; where a sufficient supply of water cannot be had, the cheapest and best power is steam, if coals be within a moderate distance; water enough for that purpose may be collected, if a spring is not at hand, from the roofs of the offices, if preserved in a tank made in a shady situation and lined with clay or bricks. If the economy of labour is to be studied in fixing the site of farm buildings, it is not less to be attended to in their construction and arrangement: they commonly form three sides of a square open to the south; the highest buildings being on the north side, and those of a lower description filling up the east and west. The stack-yard is on the north side of the square, and the barn containing the thrashing-machine projects into it at right angles with the line of hovels which constitute the northern side of the square, the straw being thrown from the rakes into a large barn or straw-house in the centre of that range, where it is piled up for use. It is of consequence that the barn be in the centre of the range, because the straw to supply the cattle is carried out right and left, and only to half the distance which much of it would require to be carried if the barn stood in any other situation; the same reason holds with regard to corn which is being thrashed and intended to be laid up in granaries: grain keeps much better in granaries that are over open hovels than in those that are over close houses in which horses or cattle of any kind are tied up: and by this arrangement the granaries are made over the hovels, which extend from each side of the barn, and the corn is carried to them from the dressing-floor below, without being taken from under the same roof, or the sacks are drawn up by a pulley and tackle worked from the wheel of the thrashing machine, whether driven by water or steam, and conveyed on hand-barrows with wheels to all parts of the granaries; from which again they are loaded into carts through trap-doors in the floor, below which the carts are placed within the hovels. The saving of labour attending the laying up and removing of corn from granaries so situated, as compared with others at a distance from the thrashing barn, is very obvious. It is desirable for the same reason that the straw barn should stand the cross way of the thrashing barn, and not in the same range with it, so that the rake of the machine may deliver the straw into the middle and not the end of it; in this way the straw has only to be carried half the length of the house instead of the whole; and when two kinds of straw are in use, one for fodder and another for litter, they can be kept quite distinct, and are easily taken out by leaving an open space between them. Peculiar situations may very properly render deviations from these general rules at times right and necessary, but where so important a consideration as the economy of labour is involved, and that for a long course of years, as in the erection of an extensive and permanent set of farm buildings, too much attention cannot be paid to it in the arrangement to be adopted.

Dilston, 18th Feb., 1841.

BREWERS' GRAINS—A MOST VALUABLE MANURE.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

Sir,—Having observed some time since the remarkable luxuriance of the grass on a small portion of land upon which some brewers' grains had been scattered, I was induced to manure several meadows with grains mixed with stable-dung, and a few acres with grains only. The crop of hay is an extraordinary one off the land manured with grains and stable-dung together; but from the land manured with *grains alone*, the crop is *prodigious*. On one part of a steep declivity, where the ordinary produce has been about 10 or 12 cwt. of hay to the acre, and the quality very coarse, a good sprinkling of grains was strewed, leaving the other part of the same ground untouched. Where the grains were spread, there is more than two tons of hay to the acre, and the grass is of the finest quality; where no grains were applied, the crop is as usual, both as to quantity and quality.

In addition to the abundance of the crop, is the advantange of its earliness. On the 29th of May I mowed a field manured with grains. The grass was over-ripe, and might have been cut a week sooner. The neighbouring fields, not so manured, will be full three weeks later. This is a matter of no little importance in this part of the country, where the weather is generally dry about the end of May and beginning of June, when there is no grass fit to cut; and almost invariably wet about the end of June and beginning of July, when all the farmers are busy hay-making.

I am now applying another dressing of grains, where the hay has been carried; and will report to you the effect upon the after-grass.

It remains to be ascertained what quantity of grains should be used to the acre; also the best season to apply them; and the condition in which they should be, in order to produce the greatest effect. To these points I will give particular attention. I am inclined to think that the grains cannot be too fresh; and that they should be laid on a very short time before the grass begins to grow, as their effect is apparent in a few days.

The experiments already made most clearly demonstrate that grains are a very economical and most efficient manure for meadow-land. I expect they will be found equally valuable for other crops, and especially for barley; being of opinion that vegetation is most rapidly promoted by manuring plants in general with their own species in a state of decay. This theory harmonizes with the ordinary course of nature, in the fall of the leaf; and is forcibly illustrated and confirmed by the facts adduced in Dr. Justus Liebig's admirable work, to which you recently directed the attention of your readers. I remain, Sir, yours faithfully,

W. H. Buckland.

Cadoxton Place, Glamorganshire, June 7, 1841.

COST OF THRASHING CORN.

In the *Farmer's Magazine* of November 1840, I observed a statement by Mr. Hillyard of the expence of thrashing wheat by a machine impelled by men, which thrashes six qrs. a day, and will cost 2s. 6d. a qr., by valuing the men's labour at 2s. a day, and the youth's about 1s. Four men impel it—one feeds and another removes the straw; two youths stack the straw, and the boy hands the sheaves to the feeder. The machine costs 14*l*. In the magazine of January last, I observed that similar machines are used in East Kent, and employ five men, a woman, and a boy, and thrash seven to eight qrs. of wheat at a cost of 1s. 6d., barley at 1s. 3d., and oats at 1s. 2d. These machines cost 12*l*. Machines of six-horse power thrash grain at a much lower rate of 6d. to 1s.; and steam-power thrashes wheat at 6d., barley at 4d., and oats at 2d. per qr., in cases of my own personal experience.

The employing of men to impel machinery in our age of improved mechanical agents, struck me as a curious circumstance; it looks like "retrograding" to feudal days, when mind had found very little command over matter, and brute force prevailed. The application of animated power in place of manual labour was reckoned a great step in improvement, and the use of inanimate agents as a greater step still; and every application has ever been reckoned an improvement, which gives mind a greater command over matter, and employs it in directing the powers or agents, and not in constituting the power itself. A Manchester manufacturer would not be easily induced to employ men to impel his machinery; but a dogged farmer is capable of harbouring any stupidity. He offers a premium for a steam-plough for the avowed and particularly expressed purpose of reducing manual labour; and at the same time rejects thrashing by machinery, because it produces the very identical result he wishes to obtain in another form. An unemployed starved labourer can burn and destroy a steam-plough as well as machinery, but a man who is well paid and employed will harm no implement; and we might have rejected all steam-power on the same grounds of the common labourers not approving them. The farmer expends capital on an unproductive point, the manufacture of the raw material—the manufacturer employs it in increasing the quantity of produce, and diminishes the latter expence, because every penny saved on that point is available for production. And besides, all farms which use machinery, employ most labour. The fact is, that an outlay of money less or more is required to make an alteration, and on this point landowners and farmers one and all invariably stumble, and are equally logical and sound in their conclusions. In an invitation given by Mr. Hillyard to a correspondent in your paper to visit him at Thorpelands, he warns him not to expect to see the most improved implements, as he grudged the "expence" of them, and he found his workmen did the work better with the old ones. This plain fact corroborated my usual observation, that societies and premiums are useless when improvements are not adopted; and that the expence is everywhere, and in every case the great barrier. It is curious to form societies and contribute money as premiums for articles, and then reject the adoption; the money is useless, and employed on an unproductive point, as not one implement in twenty is ever adopted. One of the Judges at Cambridge acknowledged to me, that he reckoned none of the implements of any use whatever; but that because they were there, the premiums must be distributed. The comparative merits of thrashing grain by flail and by machinery, and of arable and old turf-farming, would form, I often think, a suitable subject of essays for our Agricultural Society.

July 1. Cultor.

BRADFORD FARMERS' CLUB.

We noticed, on a former occasion, the formation of a Farmers' Club at Bradford, near Taunton, which it appears already numbers 40 members, including several distinguished farmers in the neighbourhood. A. Adair, Esq., of Heatherton Park, is chairman, and is ably supported by Mr. Blake, of Cutsey, Mr. R. Randall, and Mr. J. Stephens, secretary to the Taunton Society. The meetings are monthly, at 5s. from each member, and an Agricultural Library is already commenced.

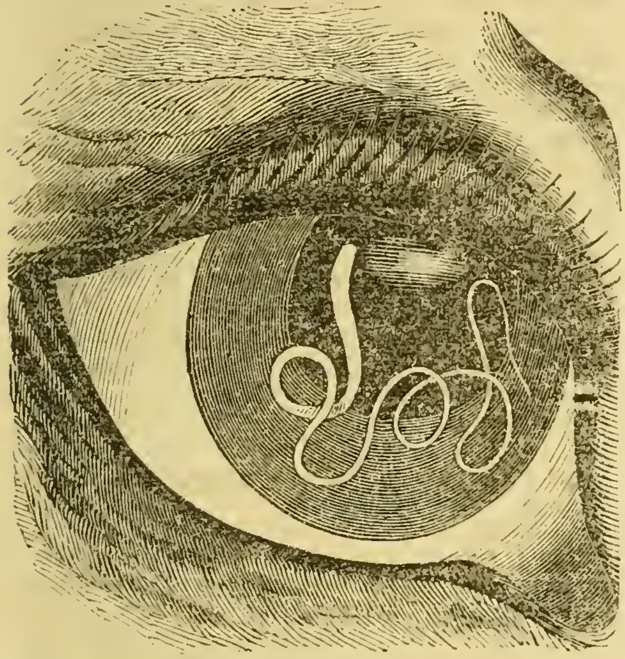
Our opinion of the great utility of such formations of society is well known, and we sincerely regret that prejudices against them should exist. Misconceptions mar many institutions for a time, but the aversion gradually wears away, if a steady course be pursued. Improved cultivation benefits all classes; but we are rather surprised that the use of bones should require any experiment now at the eleventh hour of the day, and after an experience of half a century. This very fact—the backward state of agricultural intelligence—shows the necessity and utility of Clubs and Societies; for it is very admissible, that a Club of 20 years' standing would have introduced bones long ago, and thus derived the benefit of the most valuable auxiliary manure yet known. It also shows the imperative necessity of the landowners "themselves" showing on their farm every new improvement in cultivation, and of employing for that purpose enlightened practical men as agents and bailiffs. Education and knowledge of every kind is ever despised by men in an exact ratio with their ignorance.

We shall be glad to hear of the prosperity of the Bradford Club from the Secretary, and shall have much pleasure in making public their transactions and improvements.

PARASITIC ANIMALS.

(FROM THE CULTIVATOR.)

It is a curious and interesting fact, that there is scarcely an animal from the highest to the lowest; from man, down through the whole series of organized existence to the microscopic infusoriæ, which is not the prey of other creatures, that find in their various organs and tissues a sustenance and a home, where all the changes of animal existence, nutrition, growth, and reproduction are carried on, frequently without the knowledge of the superior. To this class of animals, that live within and draw their subsistence from the bodies of others, the name of Eutozoa has been given, and for the purpose of illustration we have copied from Prof. Silliman's Journal, No. 80, a figure of one of the species which infest that noble animal the horse.



Horse's Eye.

The animal here shown belongs to the *Filaria*, a kind of worm, named from their round, thread-like appearance, and of which many species are known to exist in man and in animals. The worm in the engraving is a representation of one figured and described by Dr. Lee, of New York, as it was to be seen last year in the eye of a horse exhibited in that city. Dr. Lee says, "It was first observed in February last, (1839,) when it was about half an inch in length, since which it has increased so as to measure at present about four inches, resembling a portion of white thread or bobbin, with an enlargement at one extremity of half an inch or more in extent. The animal is confined exclusively to the anterior chamber of the eye, in which it swims with the greatest ease and activity, doubling itself in every direction and performing the most graceful and rapid evolutions." Soon after the worm was discovered, there was some inflammation of the eye, but this had passed away, and the eye when seen by Dr. Lee had as natural and healthy appearance as the other.

In the Transactions of the American Philosophical Society is an account of a similar worm in the eye of a horse, furnished by John Morgan, M.D.; in this case the worm was white, three inches in length, like fine round bobbin; but instead of being confined to either chamber of the eye, it passed with pleasure and with great rapidity from one to the other, which made it much more difficult of observation than the one exhibited in New York. The horse's eye was also much swollen and inflamed, and it was with difficulty that the eye could be kept open more than a few seconds at a time. The irritation produced by the passage of the worm over the extremely sensitive ciliary processes is supposed by Dr. Lee to have been the cause of this inflammation.

Singular as this fact of worms existing in the eyes of animals may be, and the cases we have selected here are by no means solitary, it is not this class of worms which are the most common, or of the greatest interest to the farmer. Many of the diseases of man and animals are now satisfactorily traced to these eutozoa, and a short history of some of them cannot fail to be interesting.

1. *Cœnurus cerebralis.*—This parasite is found in the brain of animals, particularly that of sheep, and gives rise to that common and fatal disease called the staggers. It has an elongated, flattish body, and a head furnished with a rostrum, hooks, and suckers. Directions for its extraction may be found in works on the sheep.

2. *Cysticercus.*—Some species of this eutozoa infest the muscular system of man, and have been found in the human eye. They are usually enclosed in a *cyst* or condensed capsule of surrounding substance. These parasites occur in animals, particularly the hog; giving rise to that condition of the muscles called "measly pork."

3. *Diastoma hepaticum.*—This is the fluke worm, found in the gall bladder and ducts of many ruminating animals; and from its being present in the liver in great numbers in the disease of sheep called the rot, it is supposed to be the producing cause of that fatal disorder. This parasite in its shape resembles a melon seed, is hermaphrodite and oviporous, and lives on the biliary secretions on the animal it infests.

4. *Filaria bronchialis.*—This animal is the cause of that distressing and fatal disease in cattle called bronchitis, and causes death by filling the bronchial tubes in such numbers that breathing is impossible. The disease called the Gapes in poultry is also caused by a filaria, (see Cultivator vol. 7, page 116, for an account of this disease and its cure in fowls.) It has been found in the lungs of persons suffering from consumption, and in the lungs of inferior animals when affected as they sometimes are with tubercles.

5. *Tænia solium.*—This is the tape worm of the human body, and frequently attains an enormous length. It is much more common in some countries than in others, though found in all. Those passed, rarely exceed twenty feet in length, but in dissections they have been found extending from the pylorus to the rectum, and then by no means fully stretched out. This is one of the most formidable parasites to which man is subject.

6. *Ascarus lumbricoides.*—This worm occurs in the hog and the ox, as well as in man, and seems to produce little inconvenience unless occurring in considerable numbers. It is very common in children, and when found in great numbers, as it sometimes is, always indicates serious derangement.

7. *Filaria ovale.*—This is the hair worm found in fishes, found in the liver of some, and the muscular parts of others. It is frequently observed in the sun fish of the lakes, in the summer season, rendering them unfit for eating.

8. *Filaria medinensis.*—This is the well known Guinea worm, found in warm climates, "most often seen in the morning dew, sometimes ten or twelve feet long and not thicker than a horse hair." This

worm is insinuated under the skin where it is felt like a tense string or wire, but though sometimes several feet in length, it produces little pain until the skin is perforated. Great care is required to extract this filaria without breaking, and when drawn out, its appearance is like an elastic white thread. It is found in various parts of the body, although most usually in the feet or legs.

9. *Filaria papillosa.*—It is well known that hogs in warm climates are sometimes attacked with a weakness of the loins, which causes them to drag their hind parts after them rather than walk, and frequently proves fatal. This disease is caused by a filaria which multiplies in the muscles of the loins, and causes paralysis of the hind legs. In some instances, where the hog was not too fat, making an incision on both sides of the spine at this part of the back, and making repeated applications of spirits of turpentine to the wounds, has produced a cure. The turpentine probably passes into the muscles sufficiently to reach and destroy the filaria. Horses are sometimes affected in the same way, and from the same cause. In the United States it is uncommon, but may be considered common in India.

10. *Oxyurus.*—This worm, which grows to the length of two or three inches, is sometimes found in the lungs of animals, particularly swine, and is doubtless the cause of many casualties in that part of the farmer's stock. Animals in which they are found will sometimes fatten well, and appear to suffer no inconvenience from them; in other cases they form tubercles, and evidently cause disease. They somewhat resemble some of the ascari.

The immense number of these parasitic creatures that have been discovered and classified, may be inferred from the fact that about 80 varieties of the *Ascarus* alone are known, and this is no means one of the most prolific genera. The method of reproduction in some of them is involved in mystery, but some of them are certainly produced from ova, and Prof. Owen, of London, the most celebrated comparative anatomist of the age, estimates the number of eggs in one *Ascaris lumbricoides* (the common worm of children,) which he examined at sixty-four millions.

Perhaps the origin of these parasitic animals is one of the most difficult questions to solve, belonging to animal physiology. Were they only found in the intestinal canal, the opinion of Linnæus that they were taken in with the food or drink, and therefore were terrestial or aquatic, would seem plausible; but such is not the case, the most secluded parts, as the brain, are infested: and besides, if we except some of the filaria, those worms which infest animal bodies, are never found out of them. Writers on this subject are at this time divided into three classes,—those who advocate the doctrine of their *spontaneous generation*; those who maintain that these worms, &c., "are produced by some living process or function of the organism, analogous to the secretion, lymph on a serous surface—an organized portion of matter is thus formed, under the influence of the vital principle of the original animal, which is afterwards thrown off, and becomes a separate being, and capable of an independent existence;" and those who attribute the origin and presence of worms, whether intestinal or visceral, in all cases to ova.

The doctrine of spontaneous generation, or that which supposes these animals to arise from an organized portion of the animal in which they are found, will probably find few advocates in this country, as to both there seem indispensable objections arising from the impossibility of there being any limit to the species produced, or any certainty in the order of their appearance, if these theories were true. Besides, there has never been a well authenticated case of spontaneous generation, and a reference of any thing to such a cause, can be considered only as an admission that we do not know how else it could be produced. "If this theory were true, it is difficult to explain why the law should be confined to the lower order of animals, and not also extend to the higher. We should expect occasionally to see a man, a quadruped, or a bird, spring up from some dunghill or fermenting vat; but this is a phenomenon which even Ovid never dreamed of."

The microscopical discoveries of Ehrenberg have done much to elucidate the question of production and propagation of these various animals, proving, as he has, that all are provided with organs of reproduction, and in many cases their fecundity and rapidity of multiplying is truly astonishing, thousands if not millions of ova being produced at a time. The old doctrine then, which attributes the origin of all vitality to an egg or germ, is not likely to be falsified in this case; and it may reasonably be concluded that those creatures that exist in and prey on the higher order of animals, are produced and disseminated in this well known way. The distinguished observer just named maintains that these minute ova can be easily carried by the circulating fluids to every part and tissue of the animal system, but they only fix themselves or propagate in those places to which they are adapted. Thus the *D. hepaticum* is never found except in the gall and bladder, liver, and their ducts; the *F. bronchitis* only in the bronchial passages; the *A. lumbricoides* in the intestines; and the *Trichina spiralis* in the muscular tissue. Those who are acquainted with the writings of some of the most distinguished physiologists, such as Bremer, Blumenbach, and Rodolphi, are aware that numerous instances have occurred in which the existence of worms in the fœtus of man and other animals, and in the intestines of birds just from the shells, was fully proved; and the only natural mode of accounting for their appearance is, that they were derived from the circulation of the parent. It is probable that in this way, viz., by circulation in the blood, the ova of the filaria reached the eye of the horse, where, finding suitable food, it remained until it reached the size shown in the engraving.

ON MAGNESIAN LIME.

A most erroneous opinion is generally entertained, and has been very confidently promulgated both by practical and scientific men, that a kind of limestone which contains a portion of magnesian earth is hurtful to vegetation, unless it be applied in a mild state, and in very small quantities. This rock constitutes the second species of the secondary limestone of the fletz formation, and forms in some places hills of very great height. The colour is usually yellow, brown, and gray, and small, granular, and glistening, and contains about twenty per cent. of carbonate of magnesia. Organic remains are found in it, as madreporites, encrinites, and producti, and fishes. It rests upon the coal formation, and alternates with the new red sandstone, and with a breccia composed of angular portions of sandstone and limestone, and cemented together by magnesian limestone. It often contains embedded balls of fetid limestone, which have a stellular radiated structure, reaching from the size of a pea to two feet in diameter, which contain no magnesia; the surrounding limestone being soft and magnesian. The coal formation lies under it near Whitehaven and in Derbyshire, and when they come in contact the quality of the latter is lessened. A scanty vegetation on the surface is said to indicate the existence of the rock.

In the natural history arrangement of earths and minerals, the magnesian limestone is called "Dolomite," from the celebrated French geologist "Dolomieu," and constitutes the third species of the "genus" limestone, called "brachytypous," or short-axed; and the brown granular Dolomite is one of the sub-species of that division—sp. gr. 3 to 3·2. It is found in beds of great thickness and extent, mostly on the coal formation; occurs massive, and in minute granular concretions; colour, gray and brown, seldom tending to blue, glimmering internally, and lustre between pearly and vitreous; fracture splintery, and sometimes flat conchoidal; fragments indeterminate, angular, and rather blunt edged—translucent on the edges; brittle, and harder than calcareous spar; sp. gr. of crystals 2·823 and 2·777—2·820 and 2·791. It often covers itself with a vitreous coating in the fire, does not moulder by exposure, and breaks into convex segments without lustre or transparency, and dissolves slowly and feebly in acids.

Magnesian lime contains, from York:—

Lime	29·5
Magnesia	20·3
Carbonic acid	47·2
Alumina and iron	·8
Loss	2·2
	100

Also

Carbonate of lime	4·429
Alumina	0·586
Magnesia	1·4
Iron	0·074
Carbonic acid gas	4·61
	11.099

From Building Hill, near Sunderland:—

Carbonate of lime	56·80
of magnesia	40·84
of iron	0·36
Insoluble matter	2·00
	100.00

This latter is a hard stratified rock, and not porous; colour white, with ochre-yellow in small stripes; dull and splintery; fragments indeterminate and sharp-edged: edges translucent and semi-hard; readily scratched with a knife; sp. gr. 2·791; dissolves very slowly.

From Humbledon Hill the stone is very porous, unstratified, and full of marine remains; colour cream-yellow and ochre; fracture uneven; opaque, and harder than calcareous spar; fragments sharp-edged; lustre glimmering, from containing a few crystals of bitter spar; sp. gr. 2·637, which may be under the truth, as the rock is porous: it contains:—

Carbonate of lime	51·50
of magnesia	44·84
Insoluble matter	1·60
Loss	2 06
	100·00

The carbonate of magnesia in these stones is composed of one atom of carbonic acid and one atom of lime; the stone dissolves in acids as soon as the purest carbonate, and contains a shell of the kind observed in Breedon rock, in Derbyshire, and formed into a class by Sowerby, under the name of "Producta."

A flexible variety is found at Marsdon, near Sunderland; colour cream-yellow, differing in intensity—some specimens of a tile-red colour, with streaks of this in the yellow-cream; fracture even, earthy, and soft; yields to the knife, not to the nail; fracture slaty in the great; lustre dull, opaque; fragments indeterminate; sp. gr. 2·544, which may be more, as the stone is porous: it contains:—

Carbonate of lime	62·00
of magnesia	35 96
Insoluble matter	1·60
Loss	0·44
	100·00

It dissolves as readily as the purest carbonate of lime.

Magnesian limestone occurs in Ireland, and in the northern and midland counties in England. A flexible variety has been discovered near Tinmouth Castle, in Northumberland, of which the colour is gray, passing into a yellow; dull, massive, and opaque; fracture earthy and slaty in different sizes; very flexible in thin plates; yields with difficulty to the nail, but readily to the knife; sp. gr. 2·544, probably under the truth, as the stone is porous. The flexibility increases to a high degree with saturation with water, but decreases with the evaporation to a certain limit, when it becomes scarcely perceptible; but when the water is completely exhaled, the flexibility is nearly as great as when the mineral was completely saturated with that fluid. No information has yet been given us of the quality of this mineral applied to any useful purpose. It bends, but is not elastic in the least degree.

Magnesian calx is powdered by calcination, and used as other limestones; but a difference in the effects having been observed, a noxious quality has been attributed to the stone containing magnesia, unless it be used with great caution, and in quantities not exceeding three loads an acre, and even so low as twenty-five to thirty bushels. The two kinds have been denominated hot and mild limes by farmers, who have found, it is said, a great quantity of the former to kill all vegetation; and the latter as powerfully to promote it. The stone found at Ferrybridge in Yorkshire, and at Doncaster in Nottinghamshire, and at Breedon in Derbyshire, are most commonly quoted; and the supposed hurtful quality has been examined and detailed scientifically by Mr. Tennant. The stones contain nearly the same component parts—about three of lime and two of magnesia; at Breedon the stone is often crystallized in a rhomboidal form, and petrified shells are often found in it. From experiments made during winter, and in a room "warmed by fire," it was found that plants did not thrive in a soil mixed with magnesian lime so well as with other lime, and that in a certain time common lime had absorbed four-fifths of its quantity of fixed air, and the magnesian only $\frac{12}{100}$. It was hence concluded that the damage arises from its remaining longer in a caustic state than mild lime. Calcined and uncalcined magnesia were tried, and both failed—the former most. Mixed with sand,

and compared with lime, the calcined magnesia proved hurtful in the ratio of one to ten; and after being kept for weeks, the noxious quality still continued. Mortar from houses, exposed for three and eight years, gave similar results; and it was found to have absorbed during three years forty-three, and in eight years forty-seven parts in one hundred of the original fixed air; while common limestone or mortar, exposed for about two years, had regained $\frac{63}{100}$ parts of its original quantity. Breedon limestone left 52·4 per cent. of earth; Dolomite, from Mount Vesuvius, 52·8, and calcareous spar left 55·8, of lime. Breedon limestone—Dolomite from Rome, Iona, and Vesuvius—stone from Doncaster, Matlock, Sherborn, and Worksop, yielded, in the quantity of twenty-five grains each, nearly the same proportions of lime and magnesia, and of iron and clay, very few differing in the integral parts, and a little in the decimal figures only. The conclusion was, that the noxious quality is owing to the presence of magnesia, and that magnesia exerts that quality by retaining its causticity longer than common lime, and upon the grounds that that causticity is hurtful to vegetation.

Magnesia (from *magnes*, a loadstone, a name given by the ancient alchymists to any substance that attracted principles from the air, and who supposed magnesia to derive from thence the nitrous acid; or from Magnesia, the city in Asia, near to which it was found, or "*quod magnas vires habet*,") is the oxide of magnesium, one of the newly discovered metals, and is composed of magnesium 60, and oxygen 40. The powder is very white and soft, having little taste or smell, and seldom found in nature in a state of purity; sp. gr. 2.13. It is found in New Jersey and in Germany, tuberous and carious, in granular and prismatic concretions; colour, snow white, passing into greenish white; lustre, pearly, or semi-transparent; soft, and somewhat elastic; adheres slightly to the tongue; fracture conchoidal, splintery or earthy; fragments sharp edged; opaque and soft; feels greasy; infusible before the blowpipe; becomes opaque and friable, and loses weight. It exists naturally as a constituent of several rocks and minerals; forms a part of the saline ingredients of sea water; and the sulphate is an active principle in most of the natural saline springs, and in soap stones, which are detected by the greasy feel. The carbonate of magnesia or common is slightly soluble, requires 2,493 times its weight of cold, and 9000 times its weight of boiling water to dissolve it; like lime, it requires more boiling water than cold, which is not the case with other soluble solids. It has very little taste and destitute of smell, and leaves a bitter sensation on the tongue; tinges vegetable blues green, does not melt in the strongest heat, exposed to the air it attracts little moisture, and carbonic acid very slowly; is not sensibly soluble in water, and has never been seen in a crystalized form; it does not combine with azote or oxygen, and has no action on the metals, nor combines with any of their oxides, nor with the fixed alkalies, or with lime. It possesses most of the properties of the alkalies, and forms neutral salts with acids, which are usually very bitter—is the most insoluble of all the earths, and bears a most intense heat without fusing; dissolves in 1600 times its weight of water, and 2000 parts of pure water hold one of magnesia. The medicinal properties are many and well known. There is a native hydrate of magnesia with 30 per cent. of water of crystalization, and occurs in the Shetland Islands and in New Jersey.

In all matters that are purely philosophical, minute accuracy is not only desirable, but absolutely and essentially necessary; but in agriculture it is wholly useless. The notion that magnesian limes are hurtful rests wholly on opinion and supposition; the scientific enquiries were founded on that supposition; and on that opinion being disproved, the scientific superstructure will tumble at once to the ground. The circumstance of the experiments being made in pots, and during winter in a room warmed with fire, is sufficient of itself to nullify the whole process—for there can exist no certainty that the lime and soil would come in contact in the same state and quantity as in the cases mentioned; and unless experiments, from which practical applications are to be deduced, be made under the same circumstances of application, they can only be regarded as facts in that particular state, time, and place, but affording no grounds for the expectation of similar results when exposed to agencies that exerted no influence on the first determination.

Having had an opportunity of using the magnesian lime of Breedon for several years with great benefit, at the rate of 200 bushels an acre, the results satisfied me that no noxious quality was inherent in the lime; and a fair trial of 400 bushels on an acre showed a crop of wheat and grass greatly superior to the rest of the field, and added a most decisive proof of the innocuous and even very valuable quality of the limestone. The lime was powdered by water as it came from the kiln, and applied next day, and consequently was as hot and caustic as possible. It may be doubted if ever lime be applied in a purely caustic state, and the benefits may be justly supposed to arise from the carbonaceous original form artificially comminuted. Certain we are that it corrodes neither animal nor vegetable life; and it tries our credibility, that 30 bushels of the substances that are known to be most hurtful to vegetable life would produce any evil when spread over an acre of land. Great quantities of the magnesian lime of Sunderland are carried coastways to the north and south, and great and lasting benefits have ever been derived from it; and it is applied at the rate of four times the quantities of the midland counties. That lime contains double the quantity of magnesia of the York and Breedon stone; and if we expect similar results from similar causes, greater damage may be expected instead of increased benefit. A greater quantity is allowed to be equivalent to a greater affinity; and there the quantity is greatly increased both in the quantity of the ingredient and its quality. It reverses the medical principle that a medicine of small quantity is a poison when largely applied; and resembles the case of salt, which is septic in small quantities, and anti-septic in larger applications. The mode and effect of combinations, whether we call it elective attraction or chemical affinity, are wholly changed by the quantity and state of the ingredients; but the present discrepancy must be regarded as proceeding from improper management and incorrect observation. The opinion has begot an insurmountable prejudice, incapable of being removed by facts shown to the senses; and it is copied by one writer from another, and handed down as an undoubted truism. Many articles prove hurtful by the application, and so fares magnesian lime. J. D.

June 18th, 1841.

SOURCE OF THE CARBON OF PLANTS.

(FROM JOHNSTON'S LECTURES ON AGRICULTURAL CHEMISTRY AND GEOLOGY.)

We have already seen reason to believe that carbon is incapable of entering directly, in its solid state, into the circulation of plants. It is generally considered, indeed, that solid substances of every kind are unfit for being taken up by the organs of plants, and that only such as are in the liquid or gaseous state, can be absorbed by the minute vessels of which the cellular substances of the roots and leaves of plants are composed. Carbon, therefore, must enter either in the gaseous or liquid form, but from what *source* must it be derived? There are but two sources from which it can be obtained,—the soil in which the plant grows—and the air by which its stem and leaves are surrounded.

In the soil much vegetable matter is often present, and the farmer adds vegetable manure in large quantities with the view of providing food for his intended crop. Are plants really fed by the vegetable matter which exists in the soil, or by the vegetable manure that is added to it?

This question has an important practical bearing. Let us, therefore, submit it to a thorough examination.

We know, from sacred history, what reason and science concur in confirming, that there was a time when no vegetable matter existed in the soil which overspread the earth's surface. The first plants must have grown without the aid of either animal or vegetable matter—that is, they must have been nourished from the air.

It is known that certain marly soils, raised from a great depth beneath the surface, and containing apparently no vegetable matter, will yet, without manure, yield luxuriant crops. The carbon in such cases must also have been derived from the air.

You know that some plants grow and increase in size when suspended in the air, and without being in contact with the soil.

You know also, that many plants—bulbous flower roots for example,—will grow and flourish in pure water only, provided they are open to the access of the atmospheric air. Seeds also will germinate, and, when duly watered, will rise into plants, though sown in substances that contain no trace of vegetable matter.

Thus De Saussure found that two beans, when caused to vegetate in the open air on pounded flints, doubled the weight of the carbon they originally contained.

Under similar circumstances Boussingault found the seeds of trefoil increase in weight 2½ times, and wheat gave plants equal in weight, when dry, to twice that of the original grains.[*] The source of the carbon in all these cases cannot be doubted.

When lands are impoverished, you lay them down to grass, and the longer they lie undisturbed the richer in vegetable matter does the soil become. When broke up, you find a black fertile mould where little trace of organic matter had previously existed.

The same observation applies to lands long under wood. The vegetable matter increases, the soil improves, and when cleared and ploughed it yields abundant crops of corn.

Do grasses and trees derive their carbon from the soil? Then how, by their growth, do they increase the quantity of carbonaceous matter which the soil contains? It is obvious that, taken as a whole, they must draw from the air not only as much as is contained in their own substance, but an excess also, which they impart to the soil.

But on this point the rapid growth of peat may be considered as absolutely conclusive. A tree falls across a little running stream, dams up the water, and produces a marshy spot. Rushes and reeds spring up, mosses take root and grow. Year after year new shoots are sent forth, and the old plants die. Vegetable matter accumulates; a bog, and finally a thick bed of peat is formed.

Nor does this peat form and accumulate at the expense of one species or genus of plants only. Latitude and local situation are the circumstances which chiefly affect this accumulation of vegetable matter on the soil. In our own country, the lowest layers of peat are formed of aquatic plants, the next of mosses, and the highest of heath. In Tierra del Fuego, "nearly every patch of level ground is covered by two species of plants (*astelia pumila* of Brown, and *donatia magellanica*), which, by their joint decay, compose a thick bed of elastic peat." "In the Falkland Islands almost every kind of plant, even the coarse grass which covers the whole surface of the islands, becomes converted into this substance."[*]

Whence have all these plants derived their carbon? The quantity originally contained in the soil is, after a lapse of years, increased ten thousand fold. Has dead matter the power of reproducing itself? You will answer at once, that all these plants must have grown at the expense of the air, must have lived on the carbon it was capable of affording them, and as they died must have left this carbon in a state unfit to nourish the succeeding races.

This reasoning appears unobjectionable, and, from the entire group of facts, we seem justified in concluding that plants every where, and under all circumstances, derive the whole of their carbon from the atmosphere.

In certain extreme cases, as in those of plants growing in the air and in soils perfectly void of organic matter, this conclusion must be absolutely true. The phenomena admit of no other interpretation. But is it as strictly true of the more usual forms of vegetable life, or in the ordinary circumstances in which plants grow spontaneously or are cultivated by the art of man? Has the vegetable matter of the soil no connection with the growth of the trees or herbage?—does it yield them no regular supplies of nourishment? Does nature every where form a vegetable mould on which her wild flowers may blossom and her primeval forests raise their lofty heads? Has the agricultural experience of all ages and of all countries led the practical farmer to imitate nature in preparing such a soil? Does nature work in vain?—is all this experience to be at once rejected?

While we draw conclusions, legitimate in kind, we must be cautious how, in degree, we extend them beyond our premises.

The consideration of one or two facts will show that our general conclusion must either be modified or more cautiously expressed.

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[*] Ann. de Chim. et de Phys. lxvii. p. 1.

[*] *Darwin's Researches in Geology and Natural History, pp.* 349-50. Dr. Greville informs me that the *astelia* approaches more nearly to the junceæ or *rush tribe*, and the *donatia* to our tufted saxifrages, than to any other British plants.

It is true that plants will, in certain circumstances, grow in a soil containing no sensible quantity of organic matter—but it is also true, *generally*, that they do not luxuriate or readily ripen their seed in such a soil.

It is consistent with almost universal observation, that the same soil is more productive when organic matter is present, than when it is wholly absent.

That if the crop be carried off a field, less organic matter is left in the soil than it contained when the crop began to grow, and that by constant cropping the soil is gradually exhausted of organic matter.

Now it must be granted that tillage alone, without cropping, would gradually lessen the amount of organic matter in the soil, by continually exposing it to the air and hastening its decay and resolution into gaseous substances, which escape into the atmosphere. But two years open fallow, with constant stirring of the land, will not rob it of vegetable matter so effectually as a year of fallow succeeded by a crop of wheat. Some of the vegetable matter, therefore, which the soil contained when the seed was sown, must be carried off the field in the crop.

The conclusion, therefore, seems to be reasonable and legitimate, that the crop which we remove from a field has not derived all its carbon directly from the air—but has extracted a portion of it immediately from the soil. It is to supply this supposed loss, that the practical farmer finds it necessary to restore to the land in the form of manure—among other substances—the carbon also of which the straw or hay had robbed the soil.

But how is this reconcileable with our previous conclusion, that the whole of the carbon is derived from the air? The difficulty is of easy solution.

A seed germinates in a soil in which no vegetable matter exists; it sprouts vigorously, increases then slowly, grows languidly at the expense of the air, and the plant dies stunted or immature. But in dying it imparts vegetable matter to the soil, on which the next seed thrives better—drawing support not only from the air, but by its roots from the soil also. The death of this second plant enriches the soil further, and thus, while each succeeding plant is partly nourished by food from the earth, yet each, when it ceases to live, imparts to the soil all the carbon which during its life it has extracted from the air. Let the quantity which each plant thus returns to the soil, exceed what it has drawn from it by only one ten-thousandth of the whole, and—unless other causes intervene—the vegetable matter in the soil must increase.

Thus while it is strictly true that the carbon contained in all plants has *been originally* derived from the air—it is not true that the *whole* of what is contained in any one crop we raise, is *directly* derived from the atmosphere—the proportion it draws from the soil is dependent upon numerous and varied circumstances.

The history of vegetable growth, therefore—in so far at least as the increase of the carbon is concerned—may be thus simply stated:—

A plant grows partly at the expense of the soil, and partly at that of the air. When it reaches maturity, or when winter arrives, it dies. The dead vegetable matter decays, a part of it is resolved into gaseous matter and escapes into the air, a part remains and is incorporated with the soil. If that which remains be greater in quantity than that which the plant in growing derived from the soil, the vegetable matter will increase; if less, it will diminish.

In warm climates the decay of dead vegetable matter is more rapid, and therefore the portion left in the soil will be less than in more temperate regions—in other words, the vegetable matter in the soil will increase less rapidly—it may not increase at all.

As we advance into colder countries, the decay and disappearance of dead vegetable matter, in the form of gaseous substances which escape into the atmosphere, become more slow—till at length, between the parallels of 40° and 45°, it begins to accumulate in vast quantities in favourable situations, forming peat bogs of greater or less extent. While the living plant here, as in warm climates, derives carbon both from the earth and from the air, the dead plant, during its slow and partial decay, restores little to the atmosphere, and therefore adds rapidly to the vegetable matter of the soil.

Again, in one and the same climate, the decay of vegetable matter, and its conversion into gaseous substances, is more rapid, in proportion to the frequency with which it is disturbed or exposed to the action of the sun and air. Hence this decay may be comparatively slow in shady woods and in fields covered by a thick sward of grass; and in such situations organic matter may accumulate, while it rapidly diminishes in an uncovered soil, or in fields repeatedly ploughed and subjected to frequent cropping.*

Being thus fitted, by nature, to draw their sustenance—now from the earth, now from the air, and now from both, according as they can most readily obtain it—plants are capable of living,—though rarely a robust life,—at the expense of either. The proportion of their food which they actually derive from each source, will depend upon many circumstances,—on the nature of the plant itself—on the period of its growth—on the soil in which it is planted—on the abundance of food presented to either extremity—on the warmth and moisture of the climate—on the duration and intensity of the sunshine, and other circumstances of a similar kind—so that the only general law seems to be, that, like animals, plants have also the power of adapting themselves, to a certain extent, to the conditions in which they are placed; and of supporting life by the aid of such sustenance as may be within their reach.

Such a view of the course of nature in the vegetable kingdom is consistent, I believe, with all known facts. And that the Deity has bountifully fitted the various orders of plants—with which the surface of the earth is at once beautified and rendered capable of supporting animal life—to draw their nourishment, in some spots more from the air, in others more from the soil, is only in accordance with the numerous provisions we every where perceive, for the preservation and continuance of the present condition of things.

By taking a one-sided view of nature, we may arrive at startling conclusions—correct, if taken as partial truths, yet false, if advanced as general propositions—and fitted to lead into error, such as have not the requisite knowledge to enable them to judge for themselves—or such as, doubtful of their own judgment, are willing to yield assent to the authority of a name.

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* In removing a crop we take away both what the plants have received from the earth and what they have absorbed from the air—the materials, in short, intended by nature to restore the loss of vegetable matter arising from the natural decay.

Of this kind appears, at first sight, to be the statement of Liebig, that "when a plant is quite matured, and when the organs by which it obtains food from the atmosphere are formed, the carbonic acid of the soil is no further required"—and that, "during the heat of summer it derives its carbon exclusively from the atmosphere."*

A little consideration will shew us that, while the proposition contained in the former quotation may be entertained and advanced as a *matter of opinion*—the latter is obviously incorrect. In summer, when the sun shines the brightest, and for the greatest number of hours, the evaporation from the leaves of all plants (their insensible perspiration) is the greatest†—the largest supply of water, therefore, must at this season be absorbed by the roots, and transmitted upwards to the leaves. But this water, before it enters the roots, has derived carbonic acid and other soluble substsnces from the air and from the soil, in as large quantity at this period, as at any other during the growth of the plant; and these substances it will carry with it in its progress through the roots and the stem,

Are the functions of the root changed at this stage of the plant's growth? Do they now absorb pure water only, carefully separating and refusing to admit,—even such substances as are held in *solution?* Or do the same materials which minister to the growth of the plant in its earlier stages, now pass upwards to the leaf and return again in the course of the circulation unchanged and unemployed, to be again rejected at the roots? Does all this take place in the height of summer, while the plant is still rapidly increasing in size? The opinion is neither supported by facts nor consistent with analogy.

But such an opinion—however the words above quoted may mislead some—is not intended to be advanced by Liebig; for, in the following page he says, that "the power which roots possess of taking up nourishment does not cease so long as nutriment is present." In summer, therefore, as well as in spring or in autumn, the plant must be ever absorbing nourishment by these roots, if the soil is capable of affording it—and thus, in the general vegetation of the globe, the increase of carbon in growing plants must, at every season of the year, be partly derived from the vegetable matter of the soil in which they grow.

ON LEASES.

It gives me much pleasure to observe that the remarks I made in this Magazine about a year ago, and which were noticed by Mr. Wyatt, have originated a very useful discussion; and I am further gratified that this periodical is open to such objects of primary importance, and that it is not surrounded by the exclusive and aristocratic halo that encircles our English Agricultural Society, which excludes all discussion, except on certain subjects, and unless they are written by certain persons. I have also remarked that no answer or observations are ever received on any article; from which it would appear that they are unimpeachable, and must pass for gospel.

I have ever been of opinion that the tenure of land is the basis of the whole fabric, and also that the whole social policy is false; and that unless it be altered and placed on the most liberal footing, little or no good will be effected—and in this opinion I am joined by several of the most enlightened agriculturists of the day. The remarks of "B. H." in last Magazine are most pithy and pertinent—he writes as a man of sense and of business—he has a sound head and enlightened practical judgment. It is certainly difficult to know if any person be orthodox or heterodox, as the former includes only our own "doxy," and the latter every person's "doxy" except our own; but whether the one or the other, let us have every opinion on the subject brought to light, and duly examined. On every well managed landed property, few regulations or restrictions will be necessary, and must be confined to some few things which the tenant is not to do, rather than direct what he is to perform. Dictation must be sparingly used, and the teachers themselves will require a previous teaching; for in ninety-nine cases in a hundred, the farmer is better qualified to dictate. A previous insolvency seems in many cases to be a necessary passport to office; and the appointments are generally confined to bankers and lawyers, and military men, who much abound in Ireland, where they have been long and usefully employed in teaching "Pat" religion by powder and ball, and are now engaged to teach him agriculture by the same mode of cogent argument and powerful persuasion. I have read somewhere that Capt. J. Pitt Kennedy superintends agricultural schools there, and shows the value of each system of cultivation on plots of two square perches. Farmers require much time to prove a rotation, and even differ after a long and extensive experience; but here a military pedant knows at once, and reduces it to the standard of "Pat's" limited comprehension, and to suit his own also. I did not read if the scholars march in file and in column, and deploy to and from their studies, or if they be taught the measured step, the formal strut, and the lofty stave. There is a great rage at present for agricultural and scientific education; and of the great use that is made of it, the following establishment on the estates of an English nobleman of the highest rank, will afford a gratifying specimen. The land steward is a quondam bankrupt banker, and the person who acts as bailiff is a disbanded seaman: on the northern estate, an ex-captain of militia acts as land steward, and has for an assistant a decayed cabinet-maker: and all these functionaries suit an ignorance similar to their own. I was personal witness to the farming of the first mentioned agent, and saw the worst cultivation I ever beheld, and the strange custom of employing women to cover the dung with hoes in the turnip drill behind the ploughs. Probably "B. H." is not accustomed to this mode of drilling; the dictating agents can teach him. I have ever reckoned the professional ignorance of such persons to be highly detrimental, both to the owner and farmer, and to the whole community, and very derogatory to the art itself.

Every man and class of men have their prejudices and their crotchets; and the farmer, though very justly reproached on that point, is not more encumbered than those who would pretend to instruct him.

It is certain that the much valued good-will and mutual kindness between landlord and tenant would be better promoted by independence than dependence—the latter generates servility and checks many noble feelings. The rents are unreasonable; a part should remain in the hands of the farmer, to enable him to undertake improvements, and he must have due security of reaping the benefit. The backward state of agriculture is almost wholly chargeable on the landowner; they show no examples, and fetter and restrain it in too many cases. I lately showed a plan of a farm building on the most improved principle to a farmer in Surrey, for his farm of 300 acres, and he instantly offered to pay six per cent. interest on the cost of it for a lease of twenty years, but on consulting the landlord, the cost (400*l.*) was a killing consideration, and could not be overcome. I have often wondered that Sir H. Davy, during his discovery of so many kaligenous and terrigenous metals, never stumbled on the metallic base of the human race—a base which exerts more influence on agriculture, and on human affairs generally, than all the metals and minerals, earths and alkalies, gases and acids, put together. I once mentioned to a dogged old lawyer with whom I was associated on an estate, the propriety of introducing draining and better farmeries, and the loss sustained by keeping so much land in unproductive old turf, growing only weeds and rubbish. On mentioning the disturbing of old turf, I roused every prejudice, and was consigned at once to Bedlam and a strait jacket. It is amusing to see them prick their ears, and wonder at the presumption of change, from a certainty of the heavens falling down next day. Their object is only to gather money, however small the quantity, and to make no outlay; an expenditure in order to bring a greater return is never for a moment entertained. Let the owner do his duty, and the farmer next.

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* Organic Chemistry applied to Agriculture, p. 48.

† Lindley's Theory of Horticulture. p. 49.

I sincerely hope "B. H." will favour us with his correspondence on this important subject; and while societies and clubs are engaged in the comparatively trifling occupation of decorating the attic story, let us examine the foundation of the house, and enquire if no improvement can be effected there. We must not expect any immediate adoption of liberality on such a point—for reason has little chance against custom and prejudice, self-interest and monopoly; but as these tenures are mainly prescriptive, continual inroads will be made until the necessity appears of erecting a new and a more liberal superstructure in their stead. RADIX.

July 1, 1841.

TABLE OF MANURES:

THEIR PROPERTIES AND MODE OF APPLICATION; FOR THE USE OF THE AGRICULTURIST. BY JOHN ROBINSON, M. D., LECTURER ON CHEMISTRY AS APPLIED TO AGRICULTURE, AND ON RURAL ECONOMY.

The following preliminary observations on the action of manures, are extracted from this very useful table, which may conveniently and usefully be hung up in some conspicuous place in the farmer's dwelling to meet the eye of the sons intended to be educated as farmers, and will thus easily fix in their minds the peculiar properties of the different kinds of manures.

"Manures are intended to supply food to plants and ultimately to become constituent parts of them. Thus, when we wish to apply manure in the case of wheat, it will be proper to ascertain from the stalk and grain, what substances are required. In the stalk we have potass combined with silicious acid; if the soil, then, contain neither of these constituents, we must supply them by artificial means or by manuring. In the grain, again, we find, on analysis, phosphoric acid in combination with magnesia and potass. In like manner, these must be supplied, if deficient in the soil. The usual manures give these substances, though the subject is not scientifically understood by mere practical men.

"In the cultivation of the turnip this is strikingly clear. As that vegetable contains phosphoric acid in quantity, phosphoric acid, if not present in the soil in sufficient quantity, as it rarely is, must be supplied to it. For instance, bone dust answers this purpose, as bone is composed chiefly of phosphoric acid and lime. The excrements of man and animals contain also phosphoric acid. Fish manure acts precisely in the same way, as fish contain phosphoric acid in abundance. Fish oil is proper for turnips on the same grounds. The instances might be multiplied to a great length. It may not here be out of place to remark that all substances, whether organic, earthy, or saline, which are employed to fertilize the soil, or become the food of plants, can only be rendered thus serviceable to vegetation when they are presented to the roots in a fluid state; and such is the fact, that the compost of the farm-yard, the crushed bones of the turnip cultivator, the oil and bones of fish, the gypsum of the grazier, the earths, lime, magnesia, and even silica, and all the saline manures, are dissolved by some process or other, before they can be absorbed by vegetables."

TRIBUTE OF RESPECT TO T. W. BRAMSTON, ESQ., FROM HIS TENANTRY.

At the audit of Mr. Bramston, at Skreens, on Saturday se'nnight, there was exhibited a striking emanation of that union of feeling in the landlord and occupier which is the best guarantee of their mutual interest. The attendance was very numerous, and in the course of the evening a beautiful piece of plate, in the form of a candelabrum, was presented to the liberal and worthy landlord. It stands 23 inches in height, and the cost was about 150*l.* The stem and branches represent an oak entwined with ivy, emblematical of the landlord and his confiding tenantry. At the base are three husbandmen—one preparing the ground with the spade for the reception of the seed; another casting the seed over the land; and the third, with sickle and bottle, going to the harvest. The candelabrum has on it the following inscription:—

PRESENTED TO
THOMAS WILLIAM BRAMSTON, ESQ.,
OF SKREENS, M.P. FOR SOUTH ESSEX,

By his Tenantry, whose names are hereunto subscribed, in testimony of their sincere regard and deep sense of gratitude to him as their Landlord, and a lasting proof of their high estimation of his conduct as an honourable and upright man;—

Owen Sparrow
George Cheveley
John E. Paris
Peter Portway
William Robinson
George Richardson
George Darby
James Groves
Joseph Pemberton
Richard Patmore
William Tipler
John Buttle
Edward Buttle
James Smith
Ann Gandy
Isaac Gardiner
William Ram
John Josling
Anthony Bentall
William Pinchion
James Lucking
Joseph Gooch
James Rutter
Nathaniel Campin
Stephen Batt
Charles Everard
Joseph Lucking
Samuel Lucking
Joanna Gardiner
Samuel Norrington
George Darby
John Horsnell.

This memorial is executed with considerable taste.

THE ALPACA.

The Alpaca, which is the subject of the above engraving, is being attempted to be naturalized in Britain, and is now possessed by several noblemen and gentlemen in England and Scotland. A memoir on the subject has been addressed to the proprietors of waste lands by Mr. Walton, and is now published in the shape of a pamphlet by Smith and Elder, London; and Connell, Liverpool. The animal is a native of the Andes Cordilleras, of Peru, and inhabits the cold regions elevated 8,000 to 12,000 feet above the level of the sea. There they find their favourite and peculiar beverage, the ichu plant, one of the gramineous tribe, which grows to a considerable height, and produces in suitable places some good natural meadows. The naturalists place them in the natural order of "Ruminantia," but they also bear a comparison with the "Capridee;" and in some properties approach the camel. The constitution is hardy, and adapted to cold, mountainous regions. The only doubt entertained with regard to our climate is the humidity, our latitude producing that noxious quality, though the degree of "dry cold" is less intense. The wool is fine and glossy, and resembles silk more than common wools; considerable quantities have been imported, and in the Custom-house returns it is included under the article "Mohair Yarn," which is manufactured into camlets and moreens. Many persons think Alpaca wool will suit the manufacture of Cashmere shawls. Fine goods are mixed with Alpaca wool, and in many cases it passes for silk.

The flesh resembles that of the deer, and is well adapted for hams. The skin is useful in bookbinding, and in making belts and straps. The average weight of the carcase of the Alpaca is about 200lbs., and many of them much exceed that weight. In our country the carcase is rather more regarded than the wool; and, under our present habits of living, any animal less useful for producing animal food would not compete with our known breed. But it appears the Alpaca is recommended for situations not used for sheep—or, at least, very rarely—and if they succeed in parks and enclosures in the first place, the trial in exposed situations will be very interesting. Such experiments, with a view to add to production, and the employment of labour especially, claim the attention of the wealthy and the support of the community. At present the few attempts do not warrant any general conclusion, but are favourable so far as they have gone. The patriotic individuals who now possess the animals will no doubt bring their capabilities to a just and satisfactory test.

FACTS ARE STUBBORN THINGS.—Four million acres of wheat, usually sown in this kingdom, produce 12,000,000 quarters; at ten shillings fall in price 6,000,000*l.* is taken from sums chiefly expended in labour. In the years 1838-9, 5,000,000 quarters of wheat were imported at a cost of 12,000,000*l.*, *paid in gold—not manufactures.* The manufacturing system creates nine-tenths of the pauperism, while nine-tenths of the expense of supporting the whole mass of the paupers is thrown upon the land.

MARSHALL'S TABLES.

Agricultural occupiers and labourers..	6,300,000
Manufacturers	2,400,000

Total interested in agriculture three times greater than the numbers directly interested in manufactures; also, of manufacturing labourers, two-thirds work for the *home market.* A fall of ten shillings the quarter in wheat, of 6s. 6d. in barley, and 6s. in oats, *equals the rent* of the land on which they grow; for instance, on good soils, worth 40s. per acre, producing four quarters of wheat, 40s.; six quarters of barley, at 6s. 6d., 39s.; seven ditto of oats at 6s., 42s. The same remark applies to land of less value; worth, for instance, 30s. per acre, producing three quarters of wheat, 30s.; four and a half of barley, 29s. 3d.; five of oats, 30s.; and ten to all descriptions of land.

NEW REGULATIONS OF SMITHFIELD MARKET.

The Chairman of the Market Committee brought up a report respecting the vacancy of Collector of Smithfield, and the duties and emoluments of the office. From the report, which is of considerable length, and of great importance as relates to the improvement of the market and the security of the public from diseased or injurious meat, we publish the following extracts, which comprehend the substance of the whole :—

"As the result of our inquiries, we are of opinion, that increase of revenue, improvement in the regulations of the market, and economy in their administration, will be best consulted by consolidating the several offices, and devolving upon one individual the responsibility of providing for the due performance of the whole of their duties.

"We do therefore recommend to your honourable court—

"That the whole of the duties heretofore performed by the manager and collectors of the tolls and their assistants should be consolidated and executed by one person, to be called the Manager and Collector of Smithfield Market, with an assistant under him, and for whom he will be held responsible.

"That neither the manager and collector of the market, nor his assistant, shall be directly or indirectly engaged or interested in any other employment, trade, or business.

"That neither the manager and collector of the market nor his assistant, shall either directly or indirectly receive from any person or persons any fees, perquisites, or gratuities whatsoever, save and except any lawful fees which now are or hereafter may be made payable in respect of the haymarket; but that such fees shall not be received by such manager and collector, without the express authority of the committee in writing, which may be, by them, at any time, revoked and annulled.

"We are likewise of opinion, that the manager and collector should possess a competent knowledge of the state and condition of stock brought to the market, that he may be able to discover and seize such as are in a diseased state, and unfit for human food; and that he may be able to give evidence in the event of proceedings being advised to be taken in respect thereof. We also think that he should possess a practical knowledge of the average quantities of fat stock usually sent to Smithfield from the grazing districts throughout the kingdom, with their peculiar seasons of supply, to enable him more effectually to arrange the general accommodation of the market, and to provide for those periodical changes which bring with them not merely a change in the supply of stock, but a change also of salesmen engaged in their disposal; which circumstance, together with casual fluctuations in supply and other causes connected therewith, frequently occasion much temporary inconvenience."

The report contains the following duties of the manager and collector, and his assistant, amongst others of minor importance :—

"To see that the whole market is properly cleansed by the scavengers according to contract, and to give information at the office of sewers of any neglect that the parties may be summoned before the commissioners, and to attend before the said commissioners to substantiate such complaint.

"To see that no cattle, sheep, lambs, &c., whether from disease or other causes, unfit for human food, be offered or exposed for sale, and if so exposed, to seize the same according to law, or take the necessary steps for summoning the parties before a magistrate, or to communicate the same to the market committee, with proper evidence to support any proceedings that the said committee may think it neccessary to institute.

"To see that the following regulations are strictly carried into effect :—

"That all calves and pigs exposed or offered for sale in the market shall be tied and penned in that part of the market only which is set apart for that purpose.

"That all cattle, sheep, &c., which shall be tied up, penned, or otherwise placed in the market contrary to the directions of the collector, shall be forthwith removed under his authority.

"That no cattle, sheep, lambs, calves, or pigs, shall stand upon or be driven along any of the flag footways in any part of the market, except so far only as may be absolutely necessary in driving the same direct to or from any pen or pens appropriated for the sale thereof, opening into or upon any such footway.

"That no cattle, sheep, lambs &c., shall be driven into, along, or through any avenue or space within the market appropriated to the sale of cattle, except such cattle shall be driven into such avenue or space by arrangement of the collector, for the purpose of sale, or shall be driven therefrom after having been purchased therein.

"That no cattle shall stand, or be offered, or exposed for sale in any off or ringdrove in that part of the market extending from King-street to Long-lane, thence to Duke-street and round to Giltspur-street; but that the space within such limits shall be kept as a clear and open way for all cattle, sheep, &c., to be driven into and out of the market.

"That no drover or other person shall detain any sheep or lambs in any of the alleys or avenues between the sheep pens within the market, after such sheep or lambs shall have been sold; but all sheep and lambs, when sold and delivered to the charge of any drover, shall be immediately driven out of the market.

"To carry into execution the several rules and ordinances made, or hereafter to be made by the Court of Aldermen (if appointed by the said court), for granting, registering, &c., for all drovers' licenses, and to use his best endeavours to see that all regulations of that court in respect of the conduct of drovers be duly and efficiently carried into execution. A copy of the existing rules and ordinances are hereunto annexed in Appendix B.

"APPENDIX B.

"1. That the clerk of Smithfield Market, or such other person as shall be appointed by the Court of Aldermen, shall, at such place as the court shall direct, grant and issue licenses and tickets under the provisions of the ordinances now in force for governing and regulating persons driving cattle, sheep, calves, and lambs within the cities of London and Westminster and liberties thereof and the bills of mortality, to all persons who shall drive, or assist, or be employed in driving cattle, sheep, calves, or lambs within the aforesaid limits.

"2. That before any licence shall be granted a requisition for the same in such form as the court shall direct, accompanied with the certificate next hereinafter mentioned, shall be signed by the person requiring such licence, and in every requisition shall be truly specified the proper name and surname and place of abode and age of the person applying for the licence.

"3. That the clerk of Smithfield Market, or such other person as aforesaid, shall, upon payment of 5s., grant to any person not under sixteen years of age, who shall produce a satisfactory certificate of his good character and ability to act as a drover, a licence to drive cattle, sheep, calves, or lambs within the aforesaid limits, and in every such licence shall be specified the number thereof, with the name, place of abode, and age, together with a description of the person to whom the same shall be granted; and every licence shall bear date the day it is granted, and continue in force until the first day of July next after the date, except it shall be sooner revoked, and except during the time it shall be suspended.

"4. That the clerk of the market or such other person aforesaid shall at the time of granting every licence deliver to the person to whom the same shall be granted, a ticket made of iron or other metal, and marked in raised brass figures or otherwise the armorial bearings of the City of London, and a number corresponding with the number which shall be inserted in the licence, and also an abstract of all such rules, orders, and ordinances made by the court as shall be in force at the time of granting such licence, and of the penalties annexed to the breach of such rules, orders, and ordinances.

"5. That every person duly licensed as aforesaid, shall at all times during his employment wear the ticket which shall have been delivered to him conspicuously upon the upper and outer part of the left arm, in such manner that the number thereon shall at all times be distinctly visible and legible, and if any person licensed as aforesaid shall not at all times during his employment wear the ticket delivered to him as before directed, or shall refuse to produce the same for inspection when required, or shall refuse to permit any person to note the number on such ticket, every person so offending shall for every offence forfeit any sum not exceeding 40s., nor less than 10s.

"6. That the clerk of the said market, or such other person as aforesaid, be authorized during one calendar month preceding the first of July in any year to issue licences, to take effect from the date thereof, and to continue in force (except as aforesaid) until the 1st of July in the following year.

"7. That the particulars of every licence shall be registered in a book, which any person shall be at liberty to inspect without payment of any fee.

"8. That upon the expiration of any licence the person to whom the same shall have been granted shall deliver up such licence, and the ticket relating thereto, to the clerk of the market, or such other person as aforesaid; and if, after the expiration of such licence, the person to whom the same shall have been granted shall use or wear the ticket relating thereto, or shall not, within the space of three days, deliver up the ticket, every person so offending shall, for every offence, forfeit any sum not exceeding 40s., nor less than 10s.

"9. That whenever any licensed person shall change his place of abode, he shall, within three days, give notice thereof, in writing signed by him, to the clerk of the market, or such other person as aforesaid, specifying his new place of abode, and shall produce his licence to the clerk of the market, or such other person as aforesaid, who shall endorse thereon and register in the said book the particulars of such change; and if any licensed person shall change his place of abode, and omit to give notice thereof as aforesaid, every person so offending shall, for every offence, forfeit any sum not exceeding 40s., nor less than 10s.

"10. That whenever the number on any ticket shall become obliterated or defaced, so that the same shall not be distinctly visible and legible, such ticket shall be delivered up to the clerk of the market, or such other person as aforesaid, who is authorised upon payment of 2s. 6d., to issue another ticket of a corresponding number; and if any person shall wear or use any ticket after it shall have become obliterated or defaced, so that the number shall not be distinctly visible and legible, every person so offending shall, for every offence, forfeit any sum not exceeding 40s., nor less than 10s.

"11. All sticks or other instruments used by persons engaged in driving cattle, sheep, calves, or lambs within the aforesaid limits shall be stamped with such distinguishing marks as the clerk of the market, or such other person as aforesaid, shall deem expedient; and if any person shall use any stick or instrument which shall not have been so marked, every person so offending shall for every offence forfeit any sum not exceeding 40s., nor less than 10s."

This report was, after considerable discussion, sent back to the committee for further consideration.—Adjourned.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

[We insert this communication at the particular desire of a correspondent.—Ed. F. M.]

Sir,—In the report of the South Wiltshire and Warminster Farmer's Club, in the Farmer's Magazine for this month, page 380, a member produced a sample of wheat grown on land of very inferior character, not being valued at more than 15s. per acre; he stated that wheat had been grown on this land for three successive years without any manure whatever, and that it would be again sown with spring wheat this year.

This produce, he informed us, was raised by the application of a chemical preparation, most simple, and most portable, and which the discoverer was willing to make known to the public, could he obtain sufficient protection by patent or otherwise. What was stated, made a very strong impression on the meeting, no less from the eloquent language and forcible manner in which it was conveyed to them, than the very important results that must arise to agriculture should it answer the expectation of its friends; and although the club had not the materials before them to justify their expressing any opinion, yet they are sure, that if it should be found on due enquiry to be a discovery of importance to agriculture to the extent suggested, the friends of that great interest will adequately protect and reward the discoverer. Now, Mr. Editor, I wish through your paper, to ask the discoverer whether this is a fact? For if such is the case, it ought not to go unnoticed like many good discoveries are, but let him apply to the Royal Agricultural Society, or to the Government at once, and if his discovery is as he says it is, they would not hesitate a moment in protecting and rewarding him; and if not, then it would fall to the ground—but to have such things promulgated and not to be looked into is wrong. Therefore I wish it to be made public, that such a discovery is made, and I beg to request the discoverer to apply to the Government, stating the above facts, (which of course he is certain of proving), and it would be criminal on the part of the Government not to reward and protect him; and should it prove to be a mere fiction, then the discoverer must publicly declare it; for as he has gone thus far, he must either prove or disprove the above statement, and I shall not remain quiet until such is done, and I hope, Mr. Editor, you will assist me. A. J.

AGRICULTURAL IMPROVEMENT. CANADA.

(FROM THE MONTREAL GAZETTE.)

It is in such a season as this that the necessity of perfectly draining arable land may be clearly demonstrated. Ploughed land that is not sufficiently drained, will in a wet spring be converted into a mass of mud, and when dried again by the heat of summer, will have lost all the good effect that should have been produced by previous ploughings. Indeed, it is to the imperfect draining of arable land that our light crops are to be attributed, as much as to any other cause. A ploughed field saturated with wet at this time of the year, particularly if the soil is a heavy clay, must be unfit to receive the seed when dry until it is again ploughed. It may be sown and harrowed, it is true, but there cannot be any reasonable expectation of a good crop, on land that is too hard to admit the roots of the plants growing upon it to extract and find nutriment to support and perfect them.

Plants derive their support from the earth, and are not like animals endowed with the power of locomotion, but are always fixed to a limited portion of the soil. They depend upon the small space which they occupy for the supply of their wants, and can place under contribution only those portions of the surrounding air, earth, and water that come in contact with them. It is necessary, then, that they should find immediately around them the nutritious principles required for their growth, and for the exercise of their functions; it is necessary that they should be able to extend their roots, in order to drain from the soil its nourishing juices, and to fasten themselves in the earth, so as to be secure from being dried up by heat or uprooted by the winds. It is impossible for them to do all this unless the soil is open and well pulverized, and this it cannot be if not well drained when ploughed.

The following observations from "Chaplat's Agricultural Chemistry" are well worthy the attention of every farmer; and there is no farmer who will read them, that must not be convinced of their truth and reasonableness:—

"The air may be considered as a vehicle, constantly loaded with a quantity of water in vapour, of which the coolness of the night causes it to deposit a part upon the earth. The surface of the ground and the leaves of plants are often moist in the morning: the return of the sun, and the heat of the day, evaporate this liquid, to be deposited again at sunset, and during the night; thus by an alternate movement, determined by the changes in the temperature of the atmosphere, at different periods of the twenty-four hours, water is constantly applied to plants, to preserve them from the excess of heat, which would wither and dry up their organs.

"The aqueous vapours suspended in the air begin to be condensed and precipitated at sunset, and with them is deposited the greatest part of the emanations which have arisen from the earth during the day; these exhalations, though beneficial to vegetation, are almost always injurious to man, and it is not without reason that he fears and shuns the night damps. In southern climates, where the heat of the sun is more intense, and rains less frequent than in the northern, vegetation is supported by the dews, which are very abundant. In order that the dews of night may produce their best effects upon vegetation, it is necessary that the soil should unite certain qualities, which it does not always possess.

"When the soil is hard and compact, and forms, by the action of the air, an impenetrable crust, the dew is deposited upon the surface, and evaporated by the rays of the sun, without having moistened the roots of the plants, or softened the earth around them; so that, of the organs that serve to convey nourishment to the plants, the leaves are the only ones benefitted by the dew, while the roots, which are the principal vehicles of nutriment, when the plant is fully developed, are not in any degree benefitted by it. It is necessary in such cases that the soil should be softened, lightened, and divided, so that the air may convey the water with which it is charged to the roots of the plants, and to every part of the earth surrounding them, to a certain depth; thus the plant can imbibe, through all its pores, the reviving moisture; and that which it received by its roots is more lasting than that which it absorbs in any other way, because the roots being sheltered from the direct rays of the sun, evaporation takes place less rapidly, and the moisture is retained, whilst the leaves are speedily dried by the heat. Besides, that earth which is most easily affected by the dews yields most readily to the action of roots, whether it be to fix the plant firmly, by their extension, or to draw from the soil its nutritive properties.

"This explains in a natural manner the origin of a custom observed by all agriculturists, and of which all acknowledge the advantages. When vegetables, such as peas, beans, potatoes, and other roots, are sown in furrows, at equal distances from each other, the soil in the intervals is hoed or dug with the utmost care, and thus rendered light, soft, and favourable to the air; whilst at the same time weeds, which would be hurtful to the cultivated plants by depriving them of nourishment afforded by the ground, are destroyed, and the soil rendered more fit to receive the rain and convey it to the roots. I do not deny that these benefits are real, but I hold them to be secondary, and subordinate to the advantage derived from opening access to the air, and permitting it to deposit its dews upon the roots, and upon the earth in contact with them.

"I have uniformly observed the effects of this method to be equally speedy and favourable in the cultivation of beet-roots, and I have never employed any other to restore their vegetation to its freshness, when they become yellowish and drooping; in three or four hours it will become a beautiful green, and the leaves spread themselves out, although no rain may have fallen; and this often when the soil had not contained a single weed. I have observed the same effect produced upon the other culinary roots.

"In the south of France, where it hardly ever rains during the summer, the foot of each setting of the vine is laid bare, by digging around it a circular trench, deep and wide enough to contain, uncovered, the stump, and the radicles proceeding from it; and the opening is speedily covered over by the leaves and branches. It is evident that this method has no other advantage than that of facilitating the access of the air to the roots, that it may deposit there the dews with which it is more abundantly charged than in cold climates—if it were not thus, this practice would expose the vines to be dried up by the scorching heat of the sun."

The above observations are manifestly correct, and it must consequently be evident to every experienced farmer, how necessary it is in this climate that the land under crops should be in a loose and open state, to receive the beneficial effects of air and moisture. It is on this principle that it would be extremely desirable to introduce drilling crops of grain, and subsequently hoeing them at least once before coming into ear. This would insure a more perfect cultivation of the soil, because seed could not be drilled in, unless the soil was open and well pulverized.

There is not certainly much encouragement to expend capital and labour on our arable lands, while wages are high and produce low; but it is equally certain that unless the labour that is necessary to produce good crops be expended on our tillage land, it would be better to leave them waste. The prospects of the Canadian agriculturist may soon be more cheering. If any measures can be adopted that would be likely to prove beneficial to the interests of our agriculture, we undoubtedly are entitled to expect that they will be adopted.

I think I cannot better conclude this communication than in the following words of "Bronterre":—"Of all human occupations, agriculture is not only the most essential to man's existence, but also the most conducive to his health, his innocence, and his happiness. Surrounded by the beauties of earth, and as it were under the eye of heaven, he naturally imbibes a more genial temperament both of body and mind than those confined in the murky atmosphere of cities, amidst the din and bustle of the workshop, or the higgling and chicanery of dishonest barter, with its attendant cares and devouring excitement. Agriculture is, moreover, the most profitable occupation, as regards the whole community; for, being the basis of all other occupations, its prosperity alone can yield the means of reproduction and prosperity to all the rest. The agriculturist produces and reproduces not only the food consumed by all employed upon the land, during the processes both of cultivation and vegetation, but also the food of every other description of person, whatever his occupation in society. Without a sufficient supply of food, and of the raw materials of clothing, such as wool, flax, hides, &c., which agriculture alone yields; without this sufficient supply during the reproduction, all manufactures and commerce would stand still, as well as agriculture itself. Considered, then, merely as a means to an end, and narrowing that end, as the political economists do, to the mere production of wealth, with scarcely any reference to its distribution and enjoyment, agriculture is the first and most important of all industrial pursuits."

In no country on earth is it so, if not in Canada; and one would imagine it should be so regarded, and valued and encouraged accordingly.

Cote St. Paul, June 2. WM. EVANS.

ON DRAINING.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In an article in your last number on draining signed "An Observer," in which, after offering a few remarks on the direction of drains, the writer proceeds to ask the following questions; what is the use of draining? or, in what manner wet land injures the crop? Having during a few years had some insight into draining, and seen many of its beneficial effects, I will venture to offer a few remarks in reply to your correspondent's questions, and should you deem them worthy of insertion, perhaps you could find space for them in your excellent magazine.

Although wheat may grow and prosper in water, it certainly will not in a wet soil. Take for instance a wet, stiff field; however well the seed may have been got in, should there come a severe winter, in the spring it will be found that the frosts have done much damage; the wheat will look yellow and spindley, and in harvest the ears will neither be full, nor the grain large.

In all lands, of whatever description, or however good the soil may be, should there be wet or springy places, a severe frost is sure to take great effect on them, and the crop will generally be slight, and the ear and grain defective. Continued wet sabs the ground and destroys the natural good qualities of any soil. The subsoil of fields near a large body of water is found generally to be of a white, cold, spongy nature, and in a manner completely perished.

In hop grounds also, which are often near rivers, and not much above their level, the continued wet is found to rot, and therefore injure the plant. In pasture ground also, I have noticed that at certain spots, the stock pull up the grass by the roots, which is caused by the action of frost on ground of a springy nature.

Draining in the course of time, very much alters the appearance of a soil; it keeps open the pores of the earth; thus after heavy rains the water quickly disappears, and the soil instead of continuing wet and cold, becomes dry and sound.

Your correspondent also inquires whether the common earth-worm is injurious? decidedly not. In the summer, the subsoil near the drains is generally moist; the worms congregate there and keep the ground porous; thus in wet weather the water quickly reaches the drains.

It is also a well-known fact, that stock do best on dry sound ground, particularly sheep; and on ground laid dry, you may keep your bullocks out later in the autumn than on wet.

Every soil requires draining, some more than others, and its beneficial effects may be seen at all times, but more particularly during the winter.

I could extend my observations farther, but I think I have adduced enough to prove that wet injures the land and the crops, and that draining does much good.

I remain, Sir, your's obediently,

Goudhurst, Kent, July 16. AN AGRICULTURIST.

PYDAR FARMERS' CLUB.

An excellent paper was read at a meeting of this club, in September last, by Mr. Richard Johns, of Crantock, "On the Propriety and Best Method of Extending the Growth of Wheat in that part of Cornwall." The subject is, of course, one of great interest; and we readily give insertion to the notice of the paper with which we have been furnished. For though we are unable to discuss the question, whether the rotation of crops recommended by Mr. Johns be practicable and valuable as a system to be generally adopted in this county—of this our agricultural readers will form their own opinions—yet, it is clear that the paper was written with the benevolent design of increasing our acreable produce of bread corn; and Mr. John's well known farming abilities induce in us the assurance that the plan he here recommends, and has for some time adopted, is well suited to his own neighbourhood.

Mr. Johns introduced his subject by first showing the advantages derivable from an extended growth of wheat, by farmers in his part of the county, where they could generally command a ready sale, and a price as high as was obtainable in any part of England. These advantages were attributable to various circumstances;—the superior quality of the seed used,—the situation of their land with reference to the mining population, and to exportation at a light expense for land carriage. Mr. Johns next proved, by comparing the average productions of a number of years, that a fair proportion of an estate sown with wheat will pay better than any other crop. He allowed that it is a little more expensive to obtain a crop of wheat than of barley, when the latter is sown, as it sometimes is improperly, after a crop of wheat; but if barley be sown after turnips, as is usual, then he considers the cost of production is the same as in wheat. And supposing that a farmer gets two-thirds as many bushels per acre of wheat as he would of barley, the expense of saving and returning amounted to just the same; as 100*l.* worth of wheat could be cut, saved, and returned at the same cost at most, as 100*l.* worth of barley. Considering the difference in carriage, the balance would be in favour of wheat. "It is only in a very few seasons," says Mr. Johns, "that wheat does not sell for double the price of barley. I find by my accounts for the last eight years, that the average price of wheat has been 7s. 9d. per imperial bushel, and of barley 3s. 7d. Therefore I conclude that wheat will make a better return than barley, and yield a greater profit to the farmer; wheat and barley being the principal productions of the soil of our neighbourhood. And as bread is emphatically called the staff of life, and to farmers, under Divine Providence, the production of bread corn is entrusted, I think we shall not be doing our duty to our fellow creatures if we neglect the growth of wheat. Right and proper as it is to improve the soil and the breed of cattle, horses, sheep, pigs, &c., &c., and while I am pleased to see the spirit with which our stock is improved and increased in value, I can but lament that we hear of large estates (and those some of the first quality land) with scarcely any wheat sown on them; while nearly all our farmers are tilling their newly broken-up land to turnips, and then the greater part of that land to barley. The growth of wheat through the kingdom must be diminished to an amazing extent, if this method is generally adopted. And if we consider how greatly a drain of money from this country to purchase foreign corn must impoverish the nation, and particularly the farmers, into whose hands that money should have gone directly for the supply of corn to the people of this densely populated land, we shall certainly feel it our duty, as lovers of our country, to try by all means to produce as much bread corn as possible, and not to lean on Russia or any other country in the world for support, when we should keep the staff in our own hand, and the money in our own pockets."

Mr. Johns next proceeded to show that great obstacles were now removed which formerly discouraged the growth of wheat. "The first I shall draw your attention to," said Mr. Johns, "is the settlement of the tithe question; by which, in many places, we are relieved from the disagreeable necessity of setting out our tithe in kind, or having our crops valued in the field; thereby paying for our own improvements at a very high rate, and having the straw taken off the estate, which should have been made to manure in our farmyards, for the benefit of our land. Another obstacle was the want of manure, which is now in a great measure supplied by the introduction of bone-dust and various other substances, whereby we are enabled to raise a crop of turnips, and leave our farm-yard manure for wheat. Lime has also been brought into such general use as dressing for wheat, that any farmer within a convenient distance from lime-kilns may generally ensure a crop of wheat on any soil and at a very moderate outlay.

"Now, gentlemen, I will endeavour to point out how the growth of wheat may be increased. And to show that I am not altogether a novice in the practice I would recommend, I can tell you that I have for the last eight or ten years constantly sown the greater part of my turnip land to wheat, and that this wheat stubble has been sown again to turnips and again to wheat for three or four years successively; and I have not found the least falling off in the crop of turnips or of wheat, the season being considered. I have invariably carted all the turnips off the land, but if they had been consumed on the land by sheep folded on them, no doubt it would be an amazing advantage to the crop of wheat; and I believe that very ordinary land would produce good crops of wheat by this method of management. I think any farm in our immediate neighbourhood may yield increased profit to the farmer if he increases the number of acres of wheat, by sowing it after turnips. In the high state of cultivation the land is now in for turnips, it will generally produce as many bushels per acre as you can get of barley; and I am fully persuaded that grass seeds will do equally as well as in barley land, for it often happens that our seeds are destroyed by the barley laying on before it is cut, and that principally owing to the land being so loose, that with a wet season it has grown so long that it would not stand up until harvest; but had wheat been sown, the seeds would not have been destroyed. To show still more clearly the advantage of wheat over barley, I have made a comparison between the two sorts of grain. Suppose a farm of 200 acres regularly tilled as in this neighbourhood—one-fifth wheat, 40 acres—say 10 bushels per acre, at 24s. per Cornish bushel, is 480*l.* Forty bushels of barley, 15 bushels per acre, at 12s. per bushel, 360*l.* There will be a balance in favour of wheat of 120*l.*, calculating barley half the price of wheat which it will not bear on the average of a number of years, as already proved. Now, granting the wheat crop should cost 3*l.* per acre to lime it for wheat, I think one-half of this should be set off as benefitting the barley crop; that would bring it back to 30s. per acre, reducing the above balance of 120*l.* to 60*l.*; but from what I have seen in this neighbourhood for the last 20 years, we cannot produce 15 bushels of barley to 10 of wheat; and I believe that the proportion does not amount generally to more than about 12 to 10. Now, suppose that one-half the number of acres of wheat stubble on a farm of the above description is annually sown with turnips, that half that quantity is sown with wheat, which may be generally conveniently accomplished before Christmas (the time I would recommend as best for sowing wheat after turnips), and if it should yield as many bushels per acre as you can get of barley, which I firmly believe will generally be the case, this certainly will yield a much greater profit to the farmer, and is a system which may very easily be adopted, and with very little, if any, sacrifice by the farmer. By what I have advanced, I do not mean to confine any farmer to the above quantities of turnips or wheat; but if the farmer finds the system good, he would no doubt go on gradually increasing as far as he conveniently can; and what an immense increase of corn might thereby be produced in the kingdom for the support of our population!

"I hope, Mr. Chairman," added Mr. Johns, "I shall not be infringing on any rule of our club by drawing your attention to a calculation I have made, respecting the great quantity of foreign corn now in this country, on which the duty has been just paid—viz., 1,000,000 quarters—besides what has been already liberated through the year for home consumption. Now, taking the parish I reside in as an average parish of the county of Cornwall, and taking the annual produce at 2,500 bushels, or 938 quarters, it would take 852 such parishes, or about 4 such counties as Cornwall, to produce the above quantity. But I trust, gentlemen, that before we leave this subject, we may be convinced that the deficiency which we have felt for several years past may be supplied from our own soil. I will again take the parish I live in to ground my calculations upon, and supposing it contains eight such estates as the one mentioned above, and on every estate 10 acres of wheat more be sown by the above method; this, at 10 bushels per acre, would yield 100 bushels on each estate, or 800 in the parish, making the produce of the county 173,600 bushels. And taking Cornwall as an average of the kingdom, I find we might by the above plan, produce the amazing quantity of 6,944,000 Cornish bushels, or 2,604,000 qrs. in England alone. It is by exertions like these, that the farmers may be enriched and the population made more contented with their native land. If the system I have spoken of were adopted, and I cannot see why it should not be, the cry of 'repeal the corn duty' would no more be heard. I believe, Mr. Chairman, we have this great power in our own hands, and if we do not exert it, the blame will be at own door. I hope, sir, I have not altogether failed in showing the necessity as well as the propriety of extending the growth of wheat. In the next place I hope I have shown that many obstacles to its cultivation have been removed, and that it may be grown with great advantage to the farmer where barley is now generally grown, that is, after turnips; that our markets may be supplied from our own fields; that the great drain of specie from this country may be prevented; that we may have corn in time of war, as well as in peace, and be independent of every other nation for bread to feed our population. And now, gentlemen, let us adopt the Cornish motto 'One and All;' and from this time turn our attention to a more extensive growth of wheat than we have hitherto done; and may God grant us his blessing on our humble endeavours!"

THE AVERAGES.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—The excitement of the elections having now materially subsided, I take the earliest opportunity of urging upon your notice the necessity and importance of an immediate alteration being made in the mode of taking the returns of corn, should the sliding scale of duties be continued—to the Government as a source of revenue, and to the farmer as a protection.

The mode I propose for your consideration is one that I have long thought of, and for some time had matured, with the exception of being able to fix upon a proper person to whom the returns should be made, which was supplied me by the letter of a correspondent of yours some few weeks back.

Should you think the plan worthy of attention, I hope you will press it with your accustomed energy on the newly elected members of Parliament and also upon the farmer, so that the latter may use their influence, and aid you by calling the attention of their members to the subject; and which I think cannot be objected to by any one, as the object is to remedy a most glaring abuse.

The reason for my wishing to do away with the present mode of taking the returns is, that the same corn is often sold in the ordinary course of business several times between quitting the grower's hands and reaching the miller's, particularly in speculative times, without any fraud being practised; and consequently is included as often in the returns, which ought to be avoided, and I think would be by the Guardian or some other parish officer being appointed to receive a return of all corn sold by each occupier, in every parish in England, Scotland, and Wales; and by every occupier of land being compelled to make such returns weekly to the Guardian or other appointed officer, by filling up a printed form and attesting the same by his or her signature, or by the signature of his or her bailiff, and delivering or causing the same to be delivered to the said appointed officer; and also that every occupier should once in every year, at a stated time, make a return of all the corn sold during the year to the aforesaid officer, and which might be checked by the weekly returns. I think the Guardian would be the most proper person to take the returns, and the best able to judge whether the returns were correct, or if fraud should be attempted, the most likely person to discover it; and the annual return would also act as a check.

The Government would also be able by these returns to judge whether production keeps pace with the increase of population, which I suppose to be the object of the French in requiring annual reports to be made by the Prefects of the crops of grain of their several departments.

I am, Sir, your's, &c.,

14th July, 1841. AGRICOLA.

TO THE EDITOR OF THE WEST BRITON.

Sir,—I feel great pleasure in complying with the request of C. D. The ground I alluded to on which the turnip crop was raised, was brought in from a Down about 40 years since, and last year it was old lay grass. When it was broken up, it was well brought under with crooked tyne, and other harrows, and burnt twice; and it appeared quite free of vegetable substance. It may be necessary to allude again to what I before stated. The only manure was bone dust, and it was tilled in the latter part of May; the earth was turned up in ridges with a double gruiter plough, and the bone dust cast into the hollow. The plough was then put through the ridge to turn the earth over the bone-dust, when the seed (which was new and excellent) was sown in the back of the ridge over the bone-dust. Soon after the young turnips made their appearance, it was evident something was destroying great quantities of them, and soon they began to be cut off and blown about the field, when it was discovered the wire-worm was the cause of it. Different hinds and gardeners were applied to for their advice; some recommended soot, others salt to be applied round the plants, to destroy the worms. I took up a quantity of the worms, and put them in vessels with soot and earth, salt and earth, &c., and provided them with food; and I soon found these things had no effect on them. In taking up the worms for experiment, I found it an easy matter to relieve the root from its voracious assailants without in the least injuring the plant in removing them. So we got five or six little boys and girls from a neighbouring tin-work, and in one afternoon they took up a quart of them! Each one had his cup to secure the insects and see the quantity they took, and by this mode a sufficient number of plants was preserved to transplant the bare parts. The pits were made, and the turnips taken up and transplanted with very small shovels; and being done in wet weather they were as good as those not removed, and turned out to be the best crop I saw for the year. It is reasonable now to ask how it was the worms were so numerous round those young roots in this field? I think it was occasioned by their being banked in a small compass round the only roots they had to feed on, at a time when they are exceedingly voracious and active, and the free state of the earth gave them little obstruction. Had the turnips been sown broadcast, the roots and worms would have been scattered over the ground, and it would not have been so easy to perceive or secure them. The field is tilled and I believe doing well. I should here remark that many respectable persons attributed the creation of such quantities of worms round the roots to the agency of bone dust. I would further remark, in an old rich turnip field last year, and which I have known all my time, there was a plot of about an acre which the worms entirely cut off. The ground was not cleaned of the worm, and it was transplanted with large rutabaga plants with the plough. The worms got so thick round the plants, that the crows came in vast numbers, and took up the plants to get at them. It was tilled with wheat after the turnips, and the worms cut off the wheat, and now, I see, the same plot is ploughed up again. The worm is always near the surface in wet weather, and if the ground was clean, would follow the turnip, and might be taken up. I would further remark to those who put their turnips in houses for the seed to ripen, they should be put, if possible, on a ground floor; and if a little dung or earth was on the roots, it would be well, as the seeds grow to a much larger size than on a wood floor, where they ripen too fast. I am, Sir, your obedient servant,

S. Treweeke.

P.S. I have had wire-worms in my keeping near twelve months, and I thought in summer they could not live long without some vegetable substance to feed on. They will eat a great deal, and are very fond of the stalk of the milky thistle cut in lengths; but in winter, when they are not so active, I have found them live a long time in earth, without vegetable food.

Breage, May 18, 1841.

THE CORN LAWS.

TO THE EDITOR.

Sir,—As at the present time the anti-corn-law agitators are endeavouring to persuade the farmers that a fixed duty of 8s. per qr. (being more than the average paid for several years back) cannot prove injurious to them, it may be interesting to ascertain what effect it would have on the agricultural interest. To do so fairly, in the first place it is necessary to ascertain what will be the value of agricultural produce with a fixed duty of 8s. per qr. In the interior of Germany wheat can be grown for 17s., the duty added making 25s. per qr.—for carriage and putting on board say 5s. per qr., making 30s., add for freight and insurance to London 6s. per qr., we have the price, viz., 36s. per qr., for which it can be grown and delivered in London. As wheat rules the price of spring corn, it would follow that barley and oats would be reduced proportionably, say about 20s. per qr. for barley and 15s. for oats. As when spring corn is cheap meat will be invariably low, we may reasonably suppose that cattle of all descriptions will fall in as great if not greater ratio than grain. If we take the average for the last five years we shall find these prices are fully 40 per cent. less; it is now to be seen what effect those prices will have on agriculture. Under the present high state of cultivation, 8*l.* per acre will, I presume, be considered little enough to cultivate land of an average quality. Supposing there to be 30 millions acres in England and Wales under cultivation that will amount at 8*l.* per acre to 240 millions pounds under a fixed duty of 8s. per qr., that sum which is exclusively the property of farmers will be reduced 40 per cent., or 96 millions; so much for the theory that farmers will sustain no loss by the change. Ruinous as it would prove to the farmers, it would be worse for the proprietors of land. Rents must be reduced at once full 50 per cent.; it would follow from that circumstance land would be depreciated to that amount, but as there would be a chance some future time of again returning to a sliding scale, I am inclined to think land would not fall more than 40 per cent. If we suppose the present average of land throughout the country to be 40*l.* per acre, and allowing 30 millions of acres to be under cultivation at 40 per cent. reduction, the loss to the proprietors would be 480 millions pounds. Having shown the loss the farmers would sustain with a fixed duty of 8s. per qr., in depreciation of stock, &c., I will endeavour to show the annual loss he will sustain by giving an estimate of the receipt and expenditure of a farm containing 500 acres of stock land, adapted for sheep, with wheat at 56s., barley 30s., and mutton 6d. per lb., which are about average prices under the present system; and another with wheat at 36s., barley 20s., and mutton 4d. per lb., which would be about the prices under a fixed duty of 8s. per qr. In so doing, that it may not be said the writer of this is at all prejudiced for or against a fixed duty of 8s. per qr. as affecting his interest—though occupying land, the greater part of his capital is invested in public companies, and if any class more than another would derive any benefit from the change, it would be the shareholders of the various companies, inasmuch as any increase of trade would add to their dividends, and the cheaper the living the better for them.

UNDER THE PRESENT SLIDING SCALE.

Expenditure.	£.	s.	d.
Rent and tithes, 500 acres at 30s. per acre	750	0	0
Poor and highway rates, 4s. per acre	100	0	0
Labour, 20s. per acre....	500	0	0
Tradesmen, toll, and sundries	100	0	0
Depreciation of stock and implements....	50	0	0
Interest on 4000*l.* at 5 per cent..........	200	0	0
	1700	0	0

Receipts.		£.	s.	d.
70 Acres wheat, seed deducted,	210 qrs. at 56s.	588	0	0
70 Ditto barley, ditto....	280 — at 30s.	420	0	0
35 Beans and peas, ditto..	105 — at 36s.	189	0	0
35 Clover 10 Oats 60 Cinquefoin 70 Fallows 100 Pasture 50 Meadow — consumed by stock, saving seed enough for seeding the land.	200tegs at 35s. 200ewes at 25s.	350 250	0 0	0 0
Wool.		100	0	0
Cows and pigs		100	0	0
Total receipts		1997	0	0
Total expenditure		1700	0	0
Profit		297	0	0

UNDER A FIXED DUTY OF 8s. PER QUARTER.

Expenditure.	£.	s.	d.
Rent and tithes, at 15s. per acre	375	0	0
Poor and highway rates, at 6s. per acre..	150	0	0
Labour, at 12s. per acre	300	0	0
Tradesmen, toll, &c	40	0	0
Depreciation of stock, &c.	30	0	0
Interest on 4000*l*., at 5*l*. per cent	200	0	0
	1095	0	0

Receipts.		£.	s.	d.
50 Acres wheat, deducting seed,	150 qrs. at 56s.	270	0	0
50 Ditto barley, ditto	200 — at 20s.	200	0	0
20 Ditto beans, ditto.....	60 — at 25s.	75	0	0
30 Clover and rye-grass 10 Oats 60 Cinquefoin 50 Fallows 80 Acres old reeds 100 Pasture — consumed by stock, saving enough seed to seed the land.	300 tegs at 17s.6d. 200ewes at 12s.6d.	262 125	10 0	0 0
50 Meadow				
Wool.		100	0	0
Cows and pigs		50	0	0
Total receipts		1082	10	0
Total expenditure.		1095	0	0
Loss.		13	0	0

It will be seen by the above under the present system there is a profit of 297*l*., whereas under the fixed duty of 8s. per qr., although only half the rent is charged, there is a loss of 13*l*., making an annual difference to the farmer of 310*l*., and 375*l*. to the landlord. The loss would have been greater had I not altered the system by having less corn and more seeds, whereby the labour and trades are reduced nearly half, and more sheep are provided for. I am, Sir, your obedient servant,

Berks, June 29, 1841. J. H.

THE CORN LAWS.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

Sir,—Having recently heard some of my agricultural friends express a belief that a continuance of Mr. Canning's Corn Bill of 1827 would have ensured to them a more effective protection than they receive from the present law, I am induced to trouble you with the following table, containing a comparison of the scales of duties respectively imposed by each law; from which it will clearly appear that when the price of wheat ranges between 59s. and 73s. per qr., the present law is, on an average, more protective by 5s. per qr. than Mr. Canning's Bill; and that, on the other hand, when the price is under 59s. per qr., and the duty receivable by virtue of *either* law, *practically nearly amounts to a prohibition*, the further greatly accelerated increase of duty under Mr. Canning's Bill is of little or no importance, if deserving the slightest consideration.

DUTIES ON FOREIGN WHEAT.

Prices.			Per present law.		Per Canning's Bill			
s.		s.	s.	d.	s.	d.	s.	
52	& under	53	34	8	40	8	6	Greater protection under Canning's Bill, but not wanted, the duty in either case being nearly prohibitory
53	"	54	33	8	38	8	5	
54	"	55	32	8	36	8	4	
55	"	56	31	8	34	8	3	
56	"	57	30	8	32	8	2	
57	"	58	29	8	30	8	1	
58	"	59	28	8	28	8		
59	"	60	27	8	26	8	1	Greater efficiency of the present corn law, as regards the amount of duties imposed, the average of which is 5s. 1-21d. per qr. on this higher range of prices.
60	"	61	26	8	24	8	2	
61	"	62	25	8	22	8	3	
62	"	63	24	8	20	8	4	
63	"	64	23	8	18	8	5	
64	"	65	22	8	16	8	6	
65	"	66	21	8	14	8	7	
66	"	67	20	8	12	8	8	
67	"	68	18	8	10	8	8	
68	"	69	16	8	8	8	8	
69	"	70	13	8	6	8	7	
70	"	71	10	8	4	8	6	
71	"	72	6	8	2	8	4	
72	"	73	2	8	1	0	1	8*d*.
73	"	..	1	0	0	0	0	

I remain, Sir, yours respectfully,

July 1, 1841. AGRICOLA.

WESTFIRLE FARMERS' CLUB.

The regular meeting of the Westfirle Farmers' Club took place on Friday se'nnight at the Ram Inn. The subject for discussion was "The most economical and the best method of keeping cart-horses," proposed by the president, J. Day, Esq., who was unavoidably absent on account of the illness of a member of his family.

With regard to the cost of winter keep several methods were mentioned, the cost of some of which per horse we subjoin, taking hay at 3*l*. per ton, and oats 20s. a qr., feeding price.

	s.	d.
3½ trusses of hay per week	5	3
One bushel of oats	2	6
	5	9
3½ bushels of carrots per week	2	4
1 bushel of oats per do.	2	6
Hay, 1 truss per do.	1	6
	6	4
4 bushels of bran.	2	8
1 bushel of oats	2	6
1 truss of hay	1	6
	6	8
2 bushels of oats	5	0
1 truss of hay	1	6
	6	6

In all the above plans it has been found that the horses did well. But it seemed that experience leaned towards a diet of roots, corn, and hay, inasmuch as variety of food, which is absolutely necessary to the health of the animal, was thereby obtained in the greatest possible degree. It appears that the carrot is, of all roots, the best adapted for the food of horses, though it is a question whether it can be advantageously grown on many soils. At all events that objection would not so much hold against Swede turnips, which may also be used with great advantage. When horses did a good share of work, it was found that the use of bran as a staple article of food did not answer well. A lump of rock salt to be kept in the manger was spoken very highly of.

The experience of the meeting appeared to bear upon one very important point—that of stabling—and there was no question that it was not only against the too prevalent practice of keeping cart-horses in a hot stable, but favourable to the plan of keeping them through the winter in the yard with a shed, large enough for two horses, with a hovel, having a manger and rack in each, by which means the annoyance and want of rest which many horses in one yard are sure to cause each other can be avoided; and while the animals have sufficient shelter from inclement weather, they have always plenty of fresh air—one of the most desirable objects to be obtained.

At the next meeting, to be held in September, the subject will be "The most advantageous rotation of crops on different soils."

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Special Council, present, Philip Pusey, Esq., President, in the chair, Earl Spencer, Lord Bridport, Hon. Captain Spencer, Sir Francis Lawley, Bart., Sir Charles Lemon, Bart., Henry Handley, Esq., Thomas Raymond Barker, Esq., Henry Blanshard, Esq., Thomas William Bramston, Esq., Edward Buller, Esq., French Burke, Esq., Colonel Challoner, John Ellman, Esq., F. H. Hodgetts Foley, Esq., Humphrey Gibbs, Esq., Stephen Grantham, Esq., C. Hillyard, Esq., W. Fisher Hobbs, Esq., Samuel Jonas, Esq., George Kimberley, Esq., Rev. W. L. Rham, William Shaw, Esq., and Thomas Weall, Esq.

The President read to the Council a letter addressed to him by his Grace the Duke of Richmond, informing the Council that he regretted much that it would not be in his power to attend at Liverpool, and therefore hoped they would appoint some one to be Vice-President at the Council Dinner on the Wednesday of the week of the meeting. On the motion of Mr. Barker, Earl Spencer was requested by the Council, to represent the noble Duke on that occasion, as the former President of the Society.

Honorary Members.

The President stated to the Council the claims which Dr. Daubeny of the University of Oxford, Professor Johnston of the University of Durham, and Dr. Sprengel of Prussia, had to the honour of being elected Honorary Members of the Society. Dr. Daubeny having embarked with a lively interest on the subject of Experimental Researches in Agricultural Chemistry, and placed his Lectures, as the new Professor of Agriculture at Oxford, at the disposal of the Society; Professor Johnston having commenced the publication of a work on Agricultural Geology, not only drawn up in a very plain and intelligible style, but which had received the high commendation of Dr. Buckland, (a gentleman so well known and appreciated by the Members of the Society;) and Dr. Sprengel being not only one of the most distinguished agricultural writers of the continent, and superintending at that time the direction of an experimental farm of the King of Prussia, but the author of a Paper on Animal Manures, which had been already translated from the German, and printed in the fourth part of the Society's Journal. On the motion of Earl Spencer, seconded by Mr. Bramston, these gentlemen were then unanimously elected Honorary Members of the Society.

Judges at the Liverpool Show.

The Council then proceeded to the election of Judges of Stock, &c., for the Liverpool Meeting; and the list of names sent in by Members of the Council of those gentlemen best suited, from their high standing in a sound and thorough knowledge of Stock, and discrimination in estimating their comparative merits, having been read, the requisite number of Judges for each class of the subjects of exhibition was selected.

Bristol Prize-Sheet.

A letter from Lord Portman, on the subject of the Prizes to be offered by the Society at the Bristol Meeting, and Mr. Hobbs's motion on the propriety of raising the scale of prizes on that occasion, having been brought forward and discussed, the Council proceeded to examine and correct the preliminary prize-sheet, which had been submitted to the general inspection of the Members at the last Anniversary Meeting; and having fixed the terms and amount of each prize in the list, the President announced that, in accordance with the byelaw specially enacted on that point, no further alteration could be made in the Bristol prizes, which were now finally settled.

Australian Agriculture.

Mr. Manning, the Society's agent in the transmission of journals to Members residing in Australia, communicated to the Council a resolution which had been passed at the quarterly meeting of the Western Australian Agricultural Society at Guildford, near Perth, on the Swan River, and transmitted by Mr. Moore, the Chairman of the Society, and Member of the Royal Agricultural Society of England, in reference to a constant interchange of communication between the two Societies. The Council unanimously resolved that the Western Australian Agricultural Society should be placed on the list of corresponding societies of the Royal Agricultural Society of England, and a set of the journals transmitted to the Australian Society, as the first step in opening the desired communication.

Epidemic among Cattle.

Messrs. Evanson and Poole, of Whitchurch, Shropshire, communicated the following statement connected with the epidemic, and their mode of treatment:—

"The epidemic among cattle is making, in our vicinity, a fearful progress, though proving only in a few instances fatal where judicious remedies have been had recourse to. We had the honour of a communication from the Society in June, 1840 (of Professor Sewell's circular of treatment), which has been of infinite service to us; and we should feel deeply indebted to your admirable Society for any additional information it may have obtained on the same subject. We have given the following remedies with success on the first appearance of the disease, when other remedies have failed—

Emetic Tartar, one dram;
Camphor and Nitre, of each two drams;
Sulphur, two ounces;
Ginger powder, one ounce; and
Epsom Salts, one pound.

"*Lotion for the mouth*—
Blue Vitriol and Alum, of each two drams;
Nitre, one dram;
Boiling water, one quart; when cold, add
Solution of Chloride of Lime, one ounce.

"*Lotion for the Feet*:—
Blue and white Vitriol, of each half an ounce;
Alum, one ounce;
Boiling water, one quart; when cold, add
Solution of Chloride of Lime, one ounce.

"We have in many cases bled freely, but have almost invariably prescribed the remedies of your circular with complete success. We shall feel most grateful for your reply, and shall be gratified in being the means of disseminating your opinions for the benefit of those around us in Shropshire and Cheshire."

Mr. Henry Hudson, jun., of Wich, near Pershore, Worcestershire, also informed the Society that the disease had broken out among his cows; the one first affected appearing to be lame, had a sore throat, and gave but little milk—the lameness arising more from the joints than the feet. The next day the milk was almost gone, the mouth had become very sore, and the animal refused all food, incessantly moving about her jaws, while a considerable quantity of saliva ran from her mouth.

Communications were received from Mr. Peter Love, of Manor House, near Naseby, Northamptonshire, informing the Council that he was trying all the different artificial manures in the growth of turnips, both on red and black land, and would furnish the society with the results he obtained. Mr. Love also suggested the desirableness of a prize for an implement to level the old crooked high lands or stitches so frequent in Northamptonshire; and from Sir Francis Mackenzie, of Cowan House, Ross-shire, on the best modes of rendering the exhibition of stock and the trial of implements at the Liverpool Meeting both instructive and interesting.

The Council then adjourned to Tuesday next, the 6th of July, to receive the names of candidates for election, and to Wednesday, the 7th of July, for the dispatch of the ordinary monthly business.

At a Monthly Council, held on Wednesday, the 7th of July, present—Sir John V. B. Johnstone, Bart., M.P., in the chair, Hon. William B. Baring, Sir Francis Lawley, Bart., Sir Charles Lemon, Bart., Sir Charles Gould Morgan, Bart., Thomas Raymond Barker, Esq., Edward Buller, Esq., French Burke, Esq., Colonel Challoner, Major E. B. Curteis, M.P., James Dean, Esq., Stephen Grantham, Esq., Richard Hodgkinson, Esq., George Kimberley, Esq., John Kinder, Esq., W. Woods Page, Esq., Francis Pym, Esq., William Shaw, Esq., James Tillyer, Esq., and William Youatt, Esq.

Colonel Challoner, Chairman of the Finance Committee, presented to the Council the Monthly Report of the State of the Funds and recommendations in reference to the Subscriptions and the ensuing Meeting of the Society at Liverpool.

LIVERPOOL MEETING.

Mr. Barker, Chairman of the Liverpool Committee, reported to the Council the result of his visit of inspection at Liverpool on the day preceding, and the progress of the arrangements for the Meeting in reference to the Dining-pavilion, Show-yard, and the preparations of Mr. Radley, of the Adelphi Hotel, for the dinners.

PROGRAMMES OF PROCEEDINGS.

Colonel Challoner laid before the Council a programme of the Duties of the Members of Council in each department of the business of the Liverpool Meeting, classed under respective heads according to the particular branch of official arrangements assigned to each; and the Council having approved of this programme, a printed copy was directed to be addressed to each Member of the Council.

Colonel Challoner also submitted to the Council the following general programme of the business of the Liverpool Meeting, in the daily order of its occurrence, and the Council directed that 4,000 copies be printed for general distribution among the Members.

PROGRAMME FOR THE WEEK AT LIVERPOOL.

Monday, July 19.—Meeting of the Council for the general arrangements of the Society.

Tuesday, July 20.—Judges determine the Prizes in the Implement yard.

Members of the Council dine by invitation with the Mayor.

Wednesday, July 21.—Judges determine the Prizes in the Cattle-yard.

Exhibition of Implements; open from 8 o'clock in the morning until 6 o'clock in the evening. Entrance, 5s.

Trial of Implements in the Fields.

Council Dinner in Lucas's Repository at 5 o'clock; the announcement of the Judges' Award of Prizes.

Thursday, July 22.—Show of Cattle and Implements; open from 8 o'clock in the morning until 4 o'clock in the afternoon. Entrance, 2s. 6d.

The Dinner of the Society in the Great Pavilion, for the Members.

Friday, July 23.—Show of Cattle and Implements; open from 8 o'clock in the morning until 2 o'clock in the afternoon. Entrance 1s.

Saturday, July 24.—Sale of Stock in Show-yard. Entrance 1s.

N.B. All Dinner-Tickets are to be had, on application by Members, at the Rooms of the Mechanics' Institution, from Tuesday morning until 12 *o'clock on Thursday.*

SHOW-YARD AND IMPLEMENT GROUND.

Earl Spencer, Mr. Druce, and Mr. Ledger, having been appointed Stewards of Yard, and Mr. Handley, Mr. Wilson Patten, and Mr. Miles, Stewards of the Implement Department, the following instructions have been issued by their direction to the exhibitors at the Liverpool Meeting, by Mr. Humphrey Gibbs, the Director of the Show:—

Circular.

"1. The Show is an enclosure on Falkner's Fields, situated between Parliament Street and Abercrombie Square.

2. The entrance for Stock is at the Parliament Street end of the enclosure, and the entrance for the Implements is in Bedford Street.

3. Stock of every description must arrive at the yard between the hours of 8 in the morning and 8 at night on Tuesday, the 20th of July; Implements, Roots, Seeds, &c., must arrive at the yard between the hours of 8 in the morning and 6 at night on Friday, the 16th, and Saturday, the 17th of July; and none will be admitted after the above-named days and hours.

4. It is particularly recommended that the stock, &c. be brought to the show-yard as early in the day as possible, in order that the animals may be quickly and conveniently placed, and the Implements, &c. properly arranged.

5. Upon the arrival of the Stock, Implements, &c. at the Show-yard, the Admission Order must be delivered by the servant in charge.

6. Care must be taken that the number tickets are on the animals when presented at the gate, so as to prevent the chance of mistake as to the identity of particular stock.

7. No one will be permitted to untie or remove any animal without permission from the Stewards or the Director of the Show.

8. When the show is over, it will be necessary for the printed Order for the Delivery of Stock, Implements, &c. to be properly filled up and presented at the Director's Office in the yard, when instructions will be given to the Society's Servants for the delivery of the stock, &c. to the respective owners.

CONVEYANCE BY RAILWAY.

A letter was received from Mr. Creed, Secretary to the Directors of the London and Birmingham Railway Company, assuring the Society that the Company would do everything that depended upon them to accommodate as far as possible the parties who might travel or send Stock by their Railway to the Meeting in Liverpool in the week commencing July 19, and that they had instructed their Superintendent to take every step to carry their wishes into effect.

A letter was also received from Mr. Sandbach, Director of the Liverpool and Birmingham Grand Junction Railway, and a member of the Committee appointed to communicate with the Society on this subject, informing the Society that as more accommodation than has ever yet been required, or is at present provided, would in every probability be rendered necessary on the occasion of the Liverpool Meeting of the Society, the board of Directors were desirous of doing all that lay in their power to accommodate the public, provided such intimations were given to them in due time of the general amount of Stock to be sent to the Meeting as would enable them to make the requisite additional arrangements, and guard as much as possible against disappointment. Mr. Sandbach concluded by suggesting that the Society should apprize the parties who intend to send Stock of the necessity of applying as early as possible for the accommodation they require, stating where and at what time it is likely to be required, in order that additional or special trains might be provided if necessary.

Mr. Moss, the Chairman, and Captain Cleather, the Manager of the Railway Company, also attended personally at the rooms of the Society to offer any explanation or receive any instructions from the Society on this subject, expressing their intention of endeavouring to obtain the desired information as to the parties or stock likely to travel along the line of the railway by public advertisement.

The Council referred these communications and a letter from Lord Hatherton, in reference to the arrangements at the meeting, to the Liverpool Committee.

BRITISH COLONIAL AGRICULTURE.

George N. Young, Esq., having been deputed by the Central Board of Agriculture of Nova Scotia to this country, for the purchase of the best stock, implements, and seeds for importation into that province, and to establish such communication and correspondence with societies and individuals in this part of the empire, as might tend to promote the objects of our colonial agriculture in Nova Scotia, New Brunswick, and Prince Edward's Island, presented to the Council various documents connected with the institution, and the immediate object of his missions, including the act of the provincial legislature for the encouragement of agriculture and rural economy by the establishment of this Central Agricultural Board, and placing at its disposal the sum of 500*l.* per annum, "for the importation from abroad of the most improved implements of husbandry, and also of seeds and live stock of various kinds; in the encouraging and circulating of agricultural publications, and the diffusion of knowledge on the different branches of husbandry and agricultural improvement, inviting the farmers in the several counties of the province to form themselves into Societies conformable to the act, and to enter into correspondence with the Central Board, who would be happy to receive and consider all such suggestions as may be offered for the improvement of Provincial Husbandry, and to furnish such information or assistance (by importations or otherwise) as may be in their power, for promoting the views of such general societies in connection with the Central Beard."

On the motion of Sir Charles Lemon, seconded by Colonel Challoner, the Central Board of Agriculture of Nova Scotia was elected a corresponding Society of the Royal Agricultural Society of England, and a set of the journals of the Society directed to be presented to that body accordingly.

John H. Hodgetts Foley, Esq., of Prestwood, near Stourbridge, Worcestershire, presented to the Society a copy of the Rules and Regulations of the Stewpony Agricultural Society; R. B. Harvey, Esq., of Harleston, Norfolk, a complete set of the Reports of the Harleston Farmers' Club; and Professor Royle, of the East India House, a further supply of Pine-tree seeds for distribution.

The election of members having been declared to be now suspended for one month, the Council then adjourned.

NEW MEMBERS.

The following gentlemen have been elected members of the Society during the month.

Abbott, Stephen, jun., Rougham, Norfolk
Adams, Thomas, Liverpool
Allen, Francis, Booden House, Haughton, Stafford
Allen, William, The Lodge, Malton, Yorkshire
Antrobus, Joseph, Bainton, Northwich, Cheshire
Ashlin, John, Frisby, Spilsby, Lincolnshire
Ashton, Adam, Oakleigh, Liverpool
Aspinall, James, Liverpool
Atterbury, Henry Thomas, junr., Speedwell Farm, Woburn, Bedfordshire
Bagott, Robert, Liverpool
Baker, R., Royston, Hertfordshire
Banks, Thomas, Westfield House, West Derby, Liverpool
Baring, Hon. Francis, Buckendon, Brandon, Norfolk
Barker, Captain Henry, Baslow, Bakewell, Derbyshire
Barker, James, Ramsey, Manningtree, Essex
Barber, George, Thrapston, Northamptonshire
Bartholomew, Thomas, Largton, Wragby, Lincolnshire
Barton, William, Nelson-street, Liverpool
Bate, Edward, Kelsterton, Northless, Flintshire
Bellis, John, Weston, Shiffnal, Shropshire
Bellairs, Rev. Henry, Bedworth Rectory, Nuneaton, Warwickshire
Benbow, John, Uxbridge, Middlesex
Bennett, Barwell Ewins, Marston House, Market Harborough, Leicestershire
Bevan, John, Aigburth, Liverpool
Birley, H. H., Manchester
Blain, William, Liverpool
Blaker, John, Fletching, Uckfield, Sussex
Blagrove, John, Calcot Park, Reading, Berkshire
Boreham, Charles, Field-place, Stone, Staffordshire
Booker, Josias, Allerton, near Liverpool
Booth, Richard, Warlaby, Northallerton, Yorkshire
Booth, George, Wainfleet, Lincolnshire
Boothby, James Brownlow, Twyford Abbey, Acton, Middlesex
Boucher, Frederick, Luddenham Court, Feversham, Kent
Bowen, George, Coton Hall, Preed, Shropshire
Boycott, William, Donnington, Shropshire
Boylen, Nicholas, Hilltown House, Drogheda, Ireland
Boyle, Robert, Ayr, Scotland
Bradshaw, Hercules, Culcavy Cottage, Hillsborough, Ireland
Bright, Samuel, The Hall, Bishop's Castle, Shropshire
Bright, Samuel, West Derby, near Liverpool
Brise, John Ruggles, Spain's Hall, Finchingfield, Braintree
Brittain, Richard, Aston, Newport, Shropshire
Brittin, William, Woodhouse, Shobdon, Leominster, Herefordshire
Brooks, Rev. Jonathan, Liverpool
Broad, H., Stourport, Worcestershire
Brown, Philip, Great Horkesley, Colchester
Brown, John, Pleasant Street, Kirkdale, Liverpool
Burber, John, Woodford, Thrapston, Northamptonshire
Bushby, William P., Aigburth, near Liverpool
Butler, Major, 26, Maddox Street, Regent Street, London
Buxton, Thomas, Malton, Yorkshire
Cannon, William, Cookham, Maidenhead, Berkshire
Card, John, Norton Ferris, Mere, Wiltshire
Carr, Robert Lindow, St. Anne Street, Liverpool
Cargey, Gilbert, Lindean, Selkirk, Scotland
Carter, John Wilkin, Little Totham Hall, Maldon
Cartler, T. G., Bevere House, near Worcester
Chaplin, F., Tathwell, Louth, Lincolnshire
Chapman, John, Upton, Atherstone, Warwickshire
Clark, George R., Drogheda, Ireland
Clark, Edward, Devonshire Terrace, Liverpool
Clarke, Stephen, Eringdon Grange, Hebden Bridge, Yorkshire
Clive, Rev. Archer, Solihull Rectory, Warwickshire
Clowes, Rev. John, Broughton Hall, Manchester
Coddington, John George, Timolin, Ballytore, Ireland
Collyer, W., Crayford, Kent
Conway, William Shipley, 104, Piccadilly, London; and Bodryddan, St. Asaph
Cooley, Charles, Easter, Ellesmere, Shropshire
Cooper, Samuel, Ardleigh, Colchester
Cormack, Henry D., Deans-gate, Manchester
Coupland, John George, Frieston, Boston, Lincolnshire

Cozins, John, Broughton Rectory, Burford, Oxfordshire
Crakanthorpe, Robert Mac Kee, Eastham, near Chester
Critchley, Henry, Haydock, Newton-le-Willows, Lancashire
Croft, Henry, Liverpool
Crosbie, Robert, Liverpool
Crossley, L. T., Olive Mount, Liverpool
Croswaite, John, Much Woolton, near Liverpool
Cunningham, George, Oak Vale, near Liverpool
Cussec, John, East Chisenbury, Devizes, Wiltshire
Davis, Jonathan, Webton Court, Herefordshire
Dawes, Wm. Bower, Armitage, Rugeley, Staffordshire
Dawson, L., High Street, Bedford
Deane, Edward Guy, Mount Pleasant, Liverpool
Denton, William, Cortown Harbour, Gorey, Ireland
Dickens, Robert A., Woodford Grange, Stourbridge, Worcestershire
Donkin, Thomas, Westow, Whitwell, York
Dufferin and Claneboy, Lord, R.N., Ballyleidy, Holywood, Ireland
Duckworth, Sir John, Bart., Ware, near Exeter, Devonshire
Duncalfe, Richard, Honnington Grange, Shiffnal, Shropshire
Duppa, Thomas Duppa, Longville, Shrewsbury
Eastwood, Peter, Royal Hotel, Moorfields, Dale-street, Liverpool
Eddison, Henry, Gateford, Worksop, Nottinghamshire
Edwards, Joshua, St. Michael's, near Liverpool
Exley, William Henry, Wisbeach, Cambridgeshire
Eyton, John Wynn, Lees Wood, Mold, Flintshire
Falkner, Edward Deane, Fairfield, near Liverpool
Faulkes, Robert, Caythorpe, near Nottingham
Fincham, Frederick, Ravenhead Plate-glass Works, St. Helen's Lancashire
Finnemore, John, Ballyward, Blessington, Ireland
Fletcher, John, St. Michael's, near Liverpool
Formby, Richard, M.D., Liverpool
Forester, Brooke, Elmley Lodge, Droitwich, Worcestershire
Foster, William, Potterhanworth, Lincolnshire
France, James France, Bostock Hall, Middlewich, Cheshire
Frankland, Thomas, Whitley, Berkshire
Frazer, George W., Rodney Street, Liverpool
Gaskell, James, Smithdown Lane, Liverpool
Gibbons, Joseph, Liverpool
Gibbs, Charles, Bishop's Lydeard, Taunton, Somersetshire
Gilliat, William Henry, Liverpool
Ginders, Samuel, Ingestre, Stafford
Gladstone, Robertson, Liverpool
Goodacre, Robert, Ullesthorpe, Lutterworth, Leicestershire
Goode, Harry Phelps, Haverfordwest, Pembrokeshire
Goodhall, John, Moss Fields, Whitchurch, Shropshire
Goodman, Joseph, Whitton, near Huntingdon
Goodwin, Charles, King's Lynn, Norfolk
Gosling, James, Sonning Farm, Reading, Berkshire
Goude, Henry, Dunstable, Bedfordshire
Grantham, John, 9, Everton-road, Liverpool
Hall, John, Wiggenhall St. Mary Magdalen, near Lynn
Hallam, John, Newcastle, Staffordshire
Hall, William Eaton, Croxteth, near Liverpool
Hall, Charles, Ewell, Surrey
Hall, Francis, Park Hall, Mansfield, Nottinghamshire
Hall, Thomas Kirkpatrick, Holly Bush, Burton-on-Trent, Staffordshire
Halladay, James, Liverpool
Hannam, George, sen., Alland Court, Minster, Isle of Thanet
Hardwick, Charles Capel, Congresbury, near Bristol
Harvey, Charles Whitfield, Liverpool
Harris, Thomas, Fox Walks, Bromsgrove, Worcestershire
Harris, W., Stoke Prior, Bromsgrove
Harrison, Richard, Aigburth, Liverpool
Harvey, Enoch, Liverpool
Hasledine, John, Liverpool
Hatfield, William, Newton Kyme, Tadcaster, Yorkshire
Hathorn, Hugh, Castlewigg, Whithorn, N. B.
Hawkins, William, Wexcomb, Great Bedwin, Wiltshire
Hegan, Joseph, Arrow Hall, Chester
Hendrie, George, Knowsley, Prescot, Lancashire
Herbert, John, Powick, Worcestershire
Hext, Thomas, Restormel Park, Lostwithiel, Cornwall
Heys, John, Prescot, Liverpool
Hill, Charles, Stainfield, Wragby
Hill, Robert Broadhurst, Breckfield House, Everton Breck, Liverpool
Higginson, Jonathan, Derby House, Rock Ferry, Cheshire
Hindmarsh, William, West Harton, Wooler, Northumberland
Hodgson, John, Everton, Liverpool
Hordern, Alexander, Oxley, Wolverhampton, Staffordshire
Hooke, Benjamin, Norton Hall, Worcester
Hornby, Joseph, Everton, Liverpool
Houldsworth, William, Farnesfield, Southwell, Nottinghamshire
Houldsworth, Henry, Coltness, N. B.
Hudson, Thomas, 6, Park Crescent, Portland Place; and Cheswardine Hall, Market Drayton
Hurry, John, Knarefen, Thorney, Cambridgeshire
Ingestre, Viscount, Ingestre, near Stafford
Jackson, Thomas, Borwick Hall, Burton, near Lancaster
James, Thomas, Cheswell Grange, Shropshire
Jenkinson, Joseph, Millwich, Stone, Staffordshire
Johnson, John, Hatton Garden, Liverpool
Jones, Benjamin Heywood, Lark Hill, Liverpool
Jones, Richard Heywood, Rodney-street, Liverpool
Jones, William, the Park, Cardiff, Glamorganshire
Kelso, James, Dunkenhalgh, Blackburn, Lancashire
Keep, Adam Corrie, Wellingborough, Northamptonshire
Killick, Henry, Liverpool
King, John, Hartridge Farm, Ashampstead, Berkshire
Knowles, Joshua, Stormer Hill, Bury, Lancashire
Lamb, John, Liverpool
Lambert, W. C., Knowle House, Dorset
Lane, John, Barton Mill, Cirencester, Gloucestershire
Legh, Peter, 26, Bedford Square, London; and Norbury Booth Hall, Knutsford, Cheshire
Leigh, Rev. John, Eggington Rectory, near Derby
Leonard, James, Whickham, Linton, Cambridgeshire
Lewis, Richard, Pentrewern, Oswestry, Shropshire
Lewes, Rev. Thomas, Taynton, Burford, Oxfordshire
Linnell, John, Woodford, Thrapston
Littledale, Edward, Rodney Street, Liverpool
Lowe, Peter, Marston, Stafford
Lucas, George, Newport Pagnell, Buckinghamshire
Lunn, John Wilbar, South Ferriby, Barton-on-Humber, Lincolnshire
Lynn, William, Waterloo Hotel, Ranelagh-street, Liverpool
Lyon, Joseph, Neston, Cheshire
MacCormick, William, Kirkdale, near Liverpool
Madden, Dennis, Liverpool
Maddy, William, Childwall Street, Liverpool
Mainwaring, Charles Kynaston, Oteley Park, Ellesmere, Shropshire
Mainwaring, Rev. James, Bromborough Hall, Chester
Mander, James, Castle Street, Liverpool
Marsh, John, Norton, Stone, Staffordshire
Marshall, J., M.D., Islington, Liverpool
Marriott, John, Liverpool
Mather, J. H., Everton, near Liverpool
Maxwell, Marmaduke Constable, Terregles, Kirkcudbrightshire, N. B.
Maynard, John Charles, Harlsey Hall, Cleveland Inn, Yorkshire
Maynard, Anthony Lax, Marton-le-Moor, Boroughbridge, Yorkshire

Mells, William, Norton Ferris, Mere, Wiltshire
Menlove, Joseph, Middle, near Shrewsbury
Minor, Walter, Moreton Say, Market Drayton, Shropshire
Minor, Samuel, Meeson, Wellington, Shropshire
Molyneux, Thomas Blayds, Newsham House, Liverpool
Morgan, Edward, Golden Grove, Holywell, Flintshire
Morris, Philip, Newbury, Bromyard, Herefordshire
Moore, George, Messing, Kelvedon, Essex
Morton, Henry, Ripon, Yorkshire
Morton, William, Ripon, Yorkshire
Moore, Thomas Durio, Liverpool
Moss, Cottingham, Aigburth, Liverpool
Moss, Thomas, Otterspool, Liverpool
Mountford, G., Pentreheyling, Churchstoke, Shropshire
Mozley, Charles, Liverpool
Mozley, Elias, Liverpool
Muir, James, 12, Great George's Square, Liverpool
Murray, Thomas, Rumford Street, Liverpool
Myers, William Joseph, Aigburth, Liverpool
Naylor, John, Hartford Hill, Northwich, Cheshire
Newman, Richard, Kersey Priory, Hadleigh, Suffolk
Nielson, Daniel, Bedford-street, Liverpool
Nixon, William, Kirkdale, near Liverpool
Noel Charles, Bell Hall, Bromsgrove
Norreys, Robert J. J., Davyhulme Hall, Manchester
Norreys, Robert Henry, Davyhulme Hall, Manchester
Owen, William, Woodhouse, Shropshire
O'Neill, Francis, Liverpool
Pagan, John, Wavertree, Liverpool
Papillon, Rev. John, Lexden, Colchester, Essex
Parker, John, Liverpool
Patton, Edward, Upton Lodge, Widness, Lancashire
Pauk, John, Oxney, Peterborough, Northamptonshire
Peacock, W., 6, Ranelagh Street, Liverpool
Peacock, H. T., Haddockstones, Yorkshire
Pearman, Luke, Mercote Hall, Berkswell, Coventry
Phibbs, Richard, Faulkner Street, Liverpool
Phillips, Charles, Chipping Norton, Oxfordshire
Phipps, Arthur Constantine, Shepton Mallett, Somerset
Pickering, William, Wragby, Lincolnshire
Platten, George, Gaywood, Lynn, Norfolk
Powill, Thomas, Woodside, Croydon, Surrey
Pritchard, R. Williams, Parkfield, Birkenhead, Cheshire
Pritt, John, King's Arms, Lancaster
Price, William, Cleveland Square, Liverpool
Prudhoe, Lord, F.R.S., Stanwick Park, Richmond, Yorkshire
Ramsey, P., M.D., 69, Chatham Street, Liverpool
Rawes, John, Thornby Colliery, Durham
Rawson, Christopher, Hope House, Halifax, Yorkshire
Rea, William Gray, Lilburn Hill, Wooler, Northumberland
Reynolds, William, Clare Terrace, Edge Hill, Liverpool.
Ridgway, Joseph, Liverpool
Rich, Richard Pinneger, Chippenham, Wiltshire
Rigby, Robert, 2, Canterbury-street, Liverpool
Rigby, James, Moss House, West Derby, Liverpool
Ripley, John, 23, Canning Street, Liverpool
Roberts, George Whitbread, King's Walden, Hitchin
Robinson, William, Holker Hall, Milnthorpe, Westmoreland
Rooke, Major-Gen. Sir Henry Willoughby, K. C. H., Moastenstern, near Windsor
Rowe, Samuel, Malpas, Cheshire
Rowley, John George, Sunning Hill, Chertsey, Surrey
Russen, Joseph, Stoke Prior, Bromsgrove
Sadler, William, Messing, Kelvedon, Essex
Salusbury, Sir John, Liverpool
Scholes, Richard, Aigburth Hill, near Liverpool
Seaton, Charles, Wavertree, near Liverpool
Shafto, Thomas, Whitworth Park, Durham
Shand, Alexander, Rupert House, near Liverpool
Shand, S. Warner, Springwood, Allerton, near Liverpool
Sharman, John Wood, Wellingborough, Northamptonshire
Shaw, William, Cold Norton, Stone, Staffordshire
Shaw, Thomas, Everton, Liverpool
Sinclair, Archibald, Hill-side House, near Liverpool
Slingsby, James, Everton, near Liverpool
Smith, William, Lilleshall, Shiffnal
Smith, Benjamin, M.P., Norwich
Smith, Richard Booth, Huxley Farm, Edmonton, Middlesex
Smith, John, Weyhill, Andover, Hampshire
Stanley, Charles, Denhall, Neston, Cheshire
Statham, Rev. R. J., Rector of Tarporley, Cheshire
Stevens, James H., Barnage House, near Lidney, Gloucestershire
Stickney, Wm., Ridgmont, Hull, Yorkshire
Smith, George, Kirkby Underwood, Folkingham, Lincolnshire
Smith, George, Bold Street, Liverpool
Stone, Richard, Trinton Hall, Colchester
Stone, Robert, Kinderton Hall, Middlewich, Cheshire
Sutton, Samuel, Moggerhanger, Biggleswade, Bedfordshire
Swan, George, York
Sykes, Edw., Wakefield, Yorkshire
Talbot, Hon. and Rev. Arthur C., Churcheaton, near Stafford
Tennant, John Robert, Kildwick Hall, Skipton, Yorkshire
Thomas, John, Cholstrey, Leominster, Herefordshire
Tiernan, Thomas, Rathkenny, Slane, Ireland
Tinne, John A., Briarley, near Liverpool
Toller, Samuel, Gedgrave, Orford, Suffolk
Tomlinson, Thomas, Chapel Ash, Wolverhampton
Toone, John, Highcross, Lutterworth, Leicestershire
Townshend, George, Sapcote Fields, Hinckley, Leicestershire
Truman, William Thomas, Lausanner, Cowbridge, Glamorganshire
Trumper, William, Dorney, Maidenhead, Berkshire
Turner, George, Fletching, Uckfield, Sussex
Turner, Samuel, Bank of England, Liverpool
Turner, John Hayward, Liverpool
Vare, L., Bodorgon, Isle of Anglesea, N.W.
Vernon, George, Mount Hanbury, Bromsgrove
Waller, Thomas, Luton, Bedfordshire
Walton, John, Seel Street, Liverpool
Warren, J., Royston, Hertfordshire
Ward, Edmund, Prescot, Lancashire
Warner, Wm., Ryton Gorse, Bedworth, Warwickshire
Warner, Richard, Wolverhill, Hinckley, Warwickshire
Webb, William, Cowley, near Stafford
Wells, Thomas, Frampnett, Northleach, Gloucestershire
Whitaker, J. Burley, Otley, Yorkshire
Whitaker, Edward, Burley, Otley, Yorkshire
Whitmore, Rev. Charles, Stockton, Shiffnal, Shropshire
Whitmore, W. Woolrych, Dudmaston, Bridgenorth, Shropshire
White, Thomas, Kenward, Yalding, Kent
White, Joseph, Worksop, Nottinghamshire
Williams, Captain Arthur Charles, Eaton Mascall, Shrewsbury
Wilson, Benjamin, Brainth, Thirsk, Yorkshire
Wilson, Matthew, North John Street, Liverpool
Wilson, Benjamin, Brawith, Thirsk, Yorkshire
Williams, Elijah, Laurence Weston, Bristol
Williams, Benjamin, Broughton Bridge, Manchester
Windus, Matthew, Wimbish, Saffron-Walden, Essex
Winnall, John, Powick, Worcestershire
Withers, George, Everton Village, near Liverpool
Wood, Charles, Langford Hall, Maldon, Essex
Woodroffee, John, Woollastone, Lidney, Gloucestershire
Woodward, Taylor, St. Michael's, near Liverpool
Woodward, Robert, Liverpool
Wright, William, Fring, Docking, Norfolk
Wynne, Richard Lilton, Astrad, near Denbigh, N. W.
Yarworth, Robert, Hadnock, near Monmouth
Yates, Joseph Brooks, West Dingle, near Liverpool

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MEETING AT LIVERPOOL.

JULY 20, 21, AND 22.

PROGRAMME OF PROCEEDINGS FOR THE WEEK.

The following account of the proceedings of the week, for the information of visitors and of the inhabitants of the town of Liverpool, was made by the distribution of small handbills, and by posting large bills on the walls of the town, and by hanging them up in the hotels and inns:—

MONDAY—Meeting of the Council for the general arrangements of the Society.

TUESDAY—Judges determine the Prizes in the Implement Yard.

Members of the Council dine by invitation with the Mayor.

WEDNESDAY—Judges determine the Prizes in the Cattle Yard.

Exhibition of Implements; open from 8 o'clock in the morning until 6 in the evening.—Entrance, 5s.

Trial of Implements at the race-course at 12 o'clock.

Council Dinner in Lucas's Repository, at 5 o'clock, and the announcement of the Judges' award of Prizes.

THURSDAY—Show of Cattle and Implements; open from 8 o'clock in the morning until 4 o'clock in the afternoon.—Entrance, 2s. 6d.

The Dinner of the Society in the great Pavilion, for the Members.

FRIDAY—Show of Cattle and Implements; open from 8 o'clock in the morning until 2 o'clock in the afternoon.—Entrance, 1s.

SATURDAY—Sale of Stock in Show-yard.—Entrace, 1s.

N.B.—All Dinner Tickets are to be had on application by Members at the Rooms of the Mechanics' Institution, from Tuesday morning at 12 o'clock until 12 o'clock on Thursday.

THE MAYOR'S DINNER TO THE COUNCIL.

On Tuesday, the mayor, Thomas Bolton, Esq., having invited the members of the council to dine with him in the Town Hall, the dinner took place in the Grand Banquetting-room, and was of the most splendid description. The mayor presided, and at his right sat Philip Pusey, Esq., M.P., president of the Royal Society of Agriculture; on his left were the Right Hon. the Earl Spencer, the Right Hon. the Earl Talbot, and the Right Hon. Lord Sandon, M.P. The following gentlemen, among others, were also present:—Sir Francis Lawley, Bart.; Major St. Paul; R. A. Slaney, Esq.; Wilson Patten, Esq., M.P.; Edward Buller, Esq., M.P.; the Rev. R. Buckland, professor of geology in the University of Oxford; T. Law Hodges, Esq.; Sir Chas. Lemon, Bart.; the Rev. Jonathan Brooks; the Rev. James Martineau; David Barclay, Esq., M.P.; J. W. Childers, Esq., M.P.; Sir J. Johnson, Bart., M.P.; the Hon. Captain Spencer; the Hon. R. Clive, M.P.; the Rev. Archer Clive; the Hon. Spencer Montague; Sir Joshua Walmsley; Thomas Thornley, Esq., M.P.; Geo. Wilbraham, Esq.; G. H. Wilson, Esq., of Harperley Park, near Bishop Auckland; the Rev. W. L. Rham; the Rev. J. R. Smythies; J. Weall, Esq.; J. V. Shelley, Esq.; H. Handley, Esq.; Sir C. G. Morgan; Hon. W. B. Baring, M.P.; T. R. Barker, Esq.; H. Blanshard, Esq.; H. Boys, Esq.; Col. Challoner; S. Grantam, Esq.; G. Webb Hall, Esq.; C. Hillyard, Esq.; W. R. Hobbs, Esq.; W. Shaw, Esq.; S. Jonas, Esq.; G. Kimberly, Esq.; J. Kinder, Esq.; W. Miles, Esq., M.P.; F. Pym, Esq.; J. Hudson, Esq.; R. Erle, Esq., &c., &c. Altogether, sixty-nine gentlemen partook of the mayor's hospitality. The toast of "Success to the Royal Society of Agriculture" was proposed by the mayor in a very neat speech. Mr. Pusey responded in a suitable address, which was loudly applauded. The health of the mayor was proposed by Lord Spencer, who spoke in warm terms of the cordiality with which the visit of the society had been received, and said he had no doubt it would be attended with the most beneficial effects. The mayor thanked the noble lord and the company for the honour conferred upon him, and said that it always had been, and ever would be, the pride of Liverpool to pay respect to any association the objects of which were so praiseworthy as those of the Royal Society of Agriculture. Many other toasts were given, and by eleven o'clock the company departed, highly gratified with the entertainments of the evening.

THE COUNCIL DINNER.

On Wednesday last the first great dinner of the Royal Agricultural Society of England, denominated the "Council Dinner," was held in Lucas's Repository, Great Charlotte-street, when 463 noblemen and gentlemen sat down, among whom were strangers from all parts of the kingdom. Philip Pusey, Esq., M.P., presided, and Earl Spencer occupied the vice-chair. Among the distinguished guests were Lord Sandon, Lord Talbot, Lord Stanley, Earl Spencer, Lord Ilchester, Lord St. John, Lord Ingestrie, Hon. C. Langdale, Bart; Sir J. Johnstone, J. Wilson Patten, Esq., M.P.; Robert Palmer, Esq., M.P. for Berkshire; George W. Wood, Esq., M.P. for Kendal; H. Handley, Esq.; T. Thornley, Esq., M.P. for Wolverhampton; Robert Milnes, Esq., M.P.; James Haughton Langston, Esq., M.P. for Oxford; William Feilden, Esq., M.P. for Blackburn; Sir Charles Burrell, Bart., M.P.; E. Divett, Esq., M.P.; Mark Phillips, Esq., M.P. for Manchester; the Mayor of Liverpool; Sir Joshua Walmsley; Professor Johnston; Sir Thomas Brancker; Dr. Buckland; E. D. Davenport, Esq., Capesthorne; R. B. Gordon, Esq.; Mr. Coates; the Hon. Mr. Clive, M.P.; Mr. Hodges, M.P.; D. Barclay, Esq., M.P.; Raymond Barker, Esq.; Hon. Captain Spencer; S. Kinder, Esq.; W. Shaw, Esq.; Sir Charles Senior; W. J. Childers, Esq., M.P.; — Kinchley, Esq.; J. Boys, Esq.; — Biggs, Esq.; Howard Pickering, Esq., of Wilcot House, Oxfordshire; W. Miles, Esq., M.P. for Somerset; Sir Chas. Lemon; J. V. Shelley, Esq.; William Potter, Esq., &c., &c.

The tables were ornamented with a number of beautiful small satin banners, on which were painted suitable devices, including live stock, implements of husbandry, &c., the paintings being executed by Mr. Ruyton, of Windsor.

On the cloth being withdrawn about ten minutes to seven o'clock,

The CHAIRMAN rose and gave the first toast, "The Queen," which was drunk with three cheers. The next toast was "Prince Albert and the rest of the Royal Family." (*Applause.*)

The Chairman then rose and said he was sure he could do nothing more grateful to the feelings of the company than read the awards of the judges—which were as follows:—

PRIZES AWARDED.

CLASS I.—Short-horns.

Bulls, *calved previously to 1st January*, 1839.

To Mr. Thomas Bates, of Kirkleavington, Yorkshire, for his short-horned bull, 4 years 7 months old, bred by himself, a prize of 30 sovs.

Bulls, *calved since the 1st January*, 1839.

To Mr. John Dawson, of Gronant, Flintshire, for his short-horned bull, 2 years 3 months old, bred by himself, a prize of 20 sovs:

Cows in Milk

To Mr. John Booth, of Killerby, near Catterick, Yorkshire, for the best cow in milk 15 sovs.

In-Calf Heifers.

To Mr. John Booth, of Killerby, near Catterick, Yorkshire, short-horned heifer, 2 years 5 months old, bred by himself, a prize of 15 sovs.

Yearling Heifers.

To Mr. John Forrest, of Stretton, Cheshire, for his short-horned yearling heifer, 1 year 2 months old, bred by himself, a prize of 10 sovs.

Bull Calves.

To Mr. J. C. Etches, of Tudbury, Burton-on-Trent, for his short-horned bull calf, 9 months old, bred by himself, a prize of 10 sovs.

CLASS II.—Herefords.

Bulls, *calved previously to the 1st of January*, 1839.

To Mr. Philip Morris, of Newbury, Herefordshire, Hereford bull, 3 years and 7 months old, bred by himself, a prize of 30 sovs.

Bulls, *calved since 1st of January*, 1839.

To Mr. John Walker, of Burton, Worcestershire, Hereford bull, 1 year and 4 months old, bred by himself, a prize of 20 sovs.

Cows in Milk.

To the Right Hon. Earl Talbot, of Ingestrie, Staffordshire, Hereford cow, 6 years and 3 months old, bred by himself, a prize of 15 sovs.

In-Calf Heifers.

To Sir Hungerford Hoskyns, of Harewood, Herefordshire, Hereford heifer, 2 years and 11 months old, bred by himself, a prize of 15 sovs.

Yearling Heifers.

To Mr. John Walker, of Burton, Worcestershire, for his Hereford yearling heifer, 1 year and 6 months old, bred by himself, a prize of 10 sovs.

Bull Calves.

To Sir H. Hoskyns, Bart., of Harewood, Herefordshire, Hereford bull calf, 8 months old, bred by himself, a prize of 10 sovs.

CLASS III.—Devons.

Bulls, *calved previously to the 1st of January*, 1839.

To Mr. Charles Gibbs, of Bishop's Lydeard, Somersetshire, Devon bull, 3 years and 4 months old, bred by Mr. J. Fullerton, a prize of 30 sovs.

Cows in Milk.

To Mr. Thomas Umbers, of Wappenbury, Warwickshire, for his North Devon cow, in milk, 5 years and 3 months old, bred by the late Mr. George Talbot, of Temple Guyting, Gloucestershire, a prize of 15 sovs.

Yearling Heifers.

To Mr. George Turner, of Barton, near Exeter, for his Devon yearling heifer, 1 year and 7 months old, bred by himself, a prize of 10 sovs.

Bull Calves.

To Mr. George Turner, of Barton, near Exeter, Devonshire, for his Devon bull calf, 6 months old, bred by himself, a prize of 10 sovs.

CLASS IV.

Any breed or cross not qualified to compete in any of the foregoing classes.

Bulls, *calved previously to the 1st January*, 1839.

To Mr. John King, of Berwick, Sussex, for his Sussex bull, 5 years and 6 months old, bred by Mr. Thomas Noaks, of Jevington, Sussex, a prize of 30 sovs.

To Mr. William Daniel, of Burton-on-Trent, Staffordshire, for his long horned bull, 6 years and 2 months old, bred by Mr. Edward Green, Odstone Hill, Leicestershire, a prize of 20 sovs.

Bulls, *calved since the 1st January*, 1839.

To Mr. William Stace, of Berwick, Sussex, for his Sussex bull, 1 year and 7 months old, bred by himself, a prize of 15 sovs.

To Mr. Thos. Ellman, of Beddingham, Sussex, for his Sussex bull, 1 year and 10 months old, bred by Mr. Putland, Firle, a prize of 20 sovs.

Cows in Milk.

To Mr. William Ellison, of Sizergh Castle, near Kendal, Westmorland, for his Wyersdale cow, 5 years old, a prize of 15 sovs.

To Mr. John King, of Berwick, Sussex, for his Sussex cow, 3 years and 6 months old, bred by himself, a prize of 10 sovs.

In Calved Heifers, not exceeding Three Years old.

To Mr. John King, of Berwick, Sussex, for his Sussex in-calf heifer, 2 years and 6 months old, bred by himself, a prize of 15 sovs.

Yearling Heifers.

To Mr. Joseph Woolf, of Hastington, Chester, for his short-horn with cross yearling heifer, 1 year and 6 months old, bred by himself, a prize of 10 sovs.

Bull Calves.

To Mr. William Hayward, of Weston Turville, Buckinghamshire, for his Hereford and short-horned bull calf, 11 months old, bred by himself, a prize of 10 sovs.

CLASS V.

Cart Stallions, Four Years old and upwards.

To the Right Hon. Earl Talbot, of Ingestrie, Staffordshire, for his cart stallion, 6 years old, bred by himself, a prize of 20 sovs.

To Mr. Thomas Crisp, of Gedgrave, Suffolk, for his cart stallion, 6 years old, bred by Mr. F. Keer, of Raydon, Suffolk, a prize of 30 sovs.

Cart Stallions, Three Years old.

To Mr. Thomas Crisp, Gedgrave, Suffolk, for his cart stallion; 3 years old, bred by himself, a prize of 20 sovs.

Cart Stallions, Foaled since 1st. January, 1839.

To the Right Hon. Earl of Derby, of Knowsley, Lancashire, for his cart stallion, 2 years old, bred by himself, a prize of 15 sovs.

Cart Mares and Foals.

To the Right Hon. Earl of Derby, of Knowsley, Lancashire, for his cart mare and foal, sire of foal belonging to himself, a prize of 20 sovs.

CLASS VI.—Leicester Sheep.

Shearling Rams.

To the Right Hon. Earl Talbot, of Ingestrie, Staffordshire, for his Leicester shearling ram, 16 months old, bred by himself, a prize of 30 sovs.

To Mr. Joseph Bennett, of Tempsford, Bedfordshire, for his Leicester shearling ram, 16 months old, bred by himself, a prize of 15 sovs.

Rams of any age above two years.

To Mr. Samuel Bennett, of Bickering's park, near Woburn, Bedfordshire, for his Leicester ram, 2 years and 4 months old, bred by himself, a prize of 15 sovs.

To the Right Hon. Earl Talbot, of Ingestrie, Staffordshire, for his Leicester ram, 52 months old, bred by himself, a prize of 30 sovs.

Ewes, Suckling their Lambs.

To Mr. Thomas Inskip, of Marston Mountaine, Bedfordshire, for his pen of 5 Leicester ewes with their lambs, bred by himself, a prize of 10 sovs.

Shearling Ewes.

To Mr. Thomas Inskip, Marston Mountaine, Bedfordshire, for his pen of 5 shearling Leicester ewes, 16 months old, bred by himself, a prize of 10 sovs.

CLASS VII.—Southdowns.

Shearling Rams.

To Mr. Jonas Webb, of Babraham, Cambridgeshire, for his Southdown shearling ram, 16 months old, bred by himself, a prize of 30 sovs.

To Mr. Jonas Webb, of Babraham, Cambridgeshire, for his Southdown shearling ram, 16 months old, bred by himself, a prize of 15 sovs.

Rams, of any Age above two years.

To Mr. Jonas Webb, of Babraham, Cambridge, for his Southdown ram, 28 months old, bred by himself, a prize of 30 sovs.

To Mr. Jonas Webb, of Babraham, Cambridge, for his Southdown ram, 28 months old, bred by himself, a prize of 15 sovs.

Shearling Ewes.

To Mr. Samuel Webb, of Babraham, Cambridge, for his pen of five Southdown shearling ewes, 16 months old, bred by Mr. Jonas Webb, of Babraham, Cambridge, a prize of 10 sovs.

CLASS VIII.

[Long-woolled Sheep not qualified to compete in the foregoing classes.]

Shearling Rams.

To Mr. Charles Large, of Broadwell, Oxon, for his new Oxfordshire long-woolled shearling ram, 16 months old, bred by himself, a prize of 30 sovs.

To Mr. Joseph Hewer, of Eastington, near Northleach, Gloucestershire, for his Cotswold shearling ram, 1 year and 5 months old, bred by himself, a prize of 15 sovs.

Rams of any age above two years.

To Mr. E. Smith, of Charlbury, Oxon, for his Oxfordshire ram, 40½ months old, bred by himself, a prize of 30 sovs.

To Mr. Thomas Wells, of Hampnett, Gloucestershire, for his improved Cotswold ram, 28 months old, bred by himself, a prize of 20 sovs.

Ewes, suckling their Lambs.

To Mr. Charles Large, of Broadwell, Oxon, for his pen of five new Oxfordshire long-woolled ewes with lambs, bred by himself, a prize of 10 sovs.

Shearling Ewes.

To Mr. E. Smith, of Charlbury, Oxon, for his pen of five Oxfordshire shear-ewes, 16½ months old, bred by himself, a prize of 10 sovs.

CLASS IX.

Boars.

To Mr. E.G. Barnard, of Gosfield Hall, Halstead, Essex, for his improved Essex boar, 1 year 1 month and 12 days old, bred by himself, a prize of 5 sovs.

To Mr. Samuel Umbers, of Dunton Hall, near Coleshill, Warwickshire, for his Normanton Hill boar, 4 years 2 months old, bred by himself, a prize of 10 sovs.

Sows, of any age.

To Mr. John Dawson, of Gronant, Flintshire, for his Leicester sow, 2 years 4 months old, bred by himself, a prize of 5 sovs.

Sows, above four and under nine months old.

To Mr. John Higginson, of Thormanby, Yorkshire, for his pen of three Leicestershire sows, 26 weeks old, bred by Mr. S. Wites, jun., Brandsly, a prize of 10 sovs.

EXTRA STOCK.

To Mr. John Forrest, of Stretton, Cheshire, for his short-horned bull, 1 year and 11 months old, bred by by himself, a prize of 5 sovs.

To Mr. Charles Tempest, of Broughton Hall, near Skipton, Yorkshire, for his short-horned heifer, 5 years and 3 months old, bred by himself, a prize of 5 sovs.

EXTRA STOCK—COMMENDATIONS.

The judges commend the Earl's Talbot's shearling Leicester ram; also Earl Talbot's 40 months old Leicester ram; also Earl Talbot's 52 months old Leicester ram; also Earl Talbot's 40 months old Leicester ram; also Mr. W. Allen's 3 years old Leicester ewe; also Mr. Allison's pen of Leicester wethers.

The judges highly commend Mr. J. Carpenter's 28½ months old Oxfordshire wethers.

The judges commend Mr. Large's 28 months' old improved Oxfordshire wethers.

The judges commend Mr. Hare's 28 months' old Southdown wethers.

The judges commend Mr. S. Grantham's 28 months' old Southdown wether.

The judges highly commend Mr. Hobbs's 20 months' old improved Essex fat pig; also Mr. Almond's 44 weeks' old sow pigs.

Class 1.

The judges highly commend Mr. John Grantham's 4 years and 4 months' old bull; also Mr. Maw's 7 years and 1 month old bull; also Mr. S. Deighton's 2 years and 8 months' old bull; also Mr. Bates' 1 year and 9 months' old bull; also Mr. J. Forrest's 5 years and 2 months' old cow; also Mr. J. Dawson's 10 years and 3 months' old cow; also Mr. C. Tempest's 2 years and 5 months' heifer; also Mr. C. Tempest's yearling heifer.

Class 2.

The judges highly commend Mr. Prince's 4 years and 8 months' old bull; also the Earl Talbot's 2 years and 9 months' old bull; also the old bulls generally; also Mr. T. Jeffries's 1 year and 8 months' old bull; also they highly commend the Rev. J. R. Smythies' in-calf heifer; also they highly commend Mr. John Price's 11 months' old bull calf; also Mr. T. Jeffries' bull calf.

Class 5.

The judges commend Mr. J. Heap's stallion.

Class 9.

The judges highly commend Mr. Barnard's 1 year 1 month and 12 days' old improved Essex boar.

The judges highly commend Mr. Almond's 11 months' old sow, but disqualify her as she never had a litter of pigs.

Seed Wheat.

The Seed Wheats selected for trial by the Society, in competition for the prize of 50s. were, the Belle Vue Talavera Wheat, exhibited by Col. Le Couteur, and the Chidham Wheat, exhibited by Mr. D. Maydull, of Godalming, Surrey.

Of the Red Wheats, none were deemed by the judges of sufficient merit to be worthy of selection.

Not having a correct list of the prizes awarded for Agricultural Implements, and the result of the trials on the race-course, we prefer postponing the insertion of what we have until next month. We may notice, however, that the prize of 20*l*. for the best pair of horses at work, and 5*l*. for the best single horse, were awarded to the Messrs. Almond, of Liverpool.

The Chairman then rose and said—Lord Spencer and Gentlemen; I have now the honour of proposing to you the health of a gentleman who has distinguished himself as a competitor for stock this day. Though not one of the best judges of stock myself, I know enough about it to be aware how much has been done by the Royal Agricultural Society of England for the general benefit of the country. (*Cheers.*) I know, as I dare say all of you do, that there are certain proofs of the excellence of stock, and I know that very great improvements have been made, through the efforts of this society and those of the Smithfield Club, in the breed of our stock. I am unable to state what are all the recent improvements which have been made; but when we look at the state of stock two or three hundred years ago, it is impossible for any man, however ignorant, not to see that much has been done. As I have already stated, I am not able to enter into the merits of all the improvements that have been made under the encouragement of this society; but, as I was accidentally reading the other day some portion of an old History of England, published about 200 years ago, I could not but be struck with the very different state of our stock to what stock was then described to be, and with the difference of opinion which existed then on the subject and at the present time. Gentlemen, I am not going to detain you to-night by reading over to you the History of England—(*laughter*)—but there are one or two curious facts in an old history, written in the time of Queen Elizabeth, which are worth referring to by way of contrast with facts now well known respecting the breed of stock, and to those I will draw your attention. The author says, that in those days "England was well known for surmounting other countries in the breed of cattle, as may be proved with ease, for where are oxen commonly more large of bone?" (*Laughter.*) He then proceeds—"In most places our graziers are now grown to be so cunning, that if they do but see an ox or bullock, and come to the feeling of him, they will give a guess at his weight, and how many score or stone of flesh and tallow he beareth—how the butcher may live by the sale, and what he may have for the skin and tallow—(*laughter*)—which is a point of skill not commonly practised heretofore. Some such graziers also are reported to ride with velvet coats and chains of gold about them." (*Laughter.*) Gentlemen, I think we have made considerable progress in the weight of cattle, and in judging of their weight, since old Hollinshead's days; but here follows a point in which I doubt if we have made much progress. He says, "And in their absence (the absence of the husbands) their wives will not let to supply those turns with no less skill than their husbands" (*Great laughter*) Gentlemen, hear the remainder of the sentence—"which is an hard work for the poor butcher, sith he, through this means can seldom be rich or wealthy by his trade." (*Renewed laughter.*) Gentlemen, he proceeds to state, that our own breed of cattle have long had the advantage of others, and he says—"Their horns also are known to be more fair and large in England than in any other places, except those which are to be seen among the Peones, which quantity, although it be given to our breed generally by nature, yet it is now and then helped also by art." So that we see in those days science was called in to the assistance of agriculture. (*Laughter.*) I don't, however, think much of their science, because they say, when beasts "be very young," breeders will "oftentimes anoint their budding horns or tender tips with honey, which mollifieth the natural hardness of that substance, and thereby maketh them to grow unto a notable greatness;" (*Laughter*) "certes, it is not strange in England to see oxen whose horns have the length of a yard or three feet between the tips." (*Renewed laughter.*) Gentlemen, it is not often we see them now. Our first improvement in cattle was in the long-horned breed, and I believe they are now little seen. There was one long-horned beast at the last Smithfield show which was much looked at. There are few, I presume, to whom we are more deeply indebted for improving the roast beef of old England than the subject of this toast. Gentlemen, I beg to propose to you the health of the successful competitor in Class I, Mr. Bates, of Kirkleavington, Yorkshire. (*Applause.*)

Mr. Bates rose, and said he begged to return his most sincere thanks, on behalf of himself and the successful candidates, for the honour they had done them. He congratulated the assembly on the glorious prospects which were held out as the results of that association to the whole world; for he felt convinced that by the improvement of agriculture they affected the interests of the entire people of the earth (*Hear and cheers*). They had arrived at that glorious era when the welfare of every man was dear to his fellow-creature; and he hoped the society would do its utmost to encourage that feeling (*Hear, hear*). It was by that alone England had risen so high in the estimation of the world. It was by that alone she could rise still higher; and he also congratulated them on the efforts now making by their society to secure that end. He only wished those efforts would be increased a thousand-fold (*Cheers*).

The Chairman said when he would mention the name of one of the first breeders of short-horned cattle in this country, he was sure they would recognise in it the name of one to whom they all owed much. Indeed, it was impossible to pass over the name of a noble lord whom he saw near him, who had done so much for the breed of cattle; and he had no doubt, knowing how much that personage had done for agriculture, and for the breed of stock, they would be anxious to do him honour. He would, therefore, propose the health of Earl Talbot (*Loud cheers*).

Earl Talbot rose amid loud cheers, and said the encouragement they had been kind enough to extend to him he was sure he could not sufficiently acknowledge, or find words to express his gratitude. With regard to the stock he had the good fortune to possess he had little to say, except what had been already said by his noble friend (Earl Spencer) at the bottom of the table. The only plan he (Earl Talbot) had acted upon, had been to select the best male he could, and give his cattle the best food he could (*Hear, hear*). In the presence of those who had much more practical knowledge on the subject than himself, it would ill become him to say much on the object which had called them together; but he would just observe, that it would be seen from what he had already stated, that he held that the improvement of stock implied a necessity for the cultivation of land; for if that was not attended to, it would be impossible stock could be brought to perfection (*Hear, hear*). He was happy to see so many gentlemen of all classes there that night. It had always been his wish to see the intimate connection which his worship the mayor so happily expressed yesterday, "The unity of trade and agriculture"—(*hear, hear*)—because he (Earl Talbot) had always felt that without this unity—the unity of trade, commerce, agriculture, and good feeling—throughout this great country, it was impossible they could ever succeed as they ought in the purposes for which they were associated (*Applause*). The noble lord thanked the company for the great honour conferred on him in the toast, and said if any of the gentlemen present would do him the honour of coming to Ingestrie (to the Cattle Show on the first Thursday in June next year) he should have great pleasure in seeing them there. He concluded by proposing the health of Thos. Bolton, Esq., mayor of Liverpool (*Loud applause*).

The Mayor rose and said he felt overpowered by the kind manner in which the noble lord had been pleased to bring him before the meeting. He observed that he was sure trade was not felt by those around him to be the antagonist of agriculture (a sentiment which was warmly responded to by the company) and expressed his belief that "ships, colonies, and commerce" were necessary to the greatness of a nation.

The Chairman next proposed the healths of the successful candidates for the best breed of sheep, and mentioned the names of Mr. Jonas Webb, of Babraham, near Cambridge, and Mr. Large, of Broadwell, near Burford, Oxfordshire (*Applause*).

Mr. Webb and Mr. Large briefly returned thanks.

The Chairman said the names he had to mention in connexion with the next prize—the prizes for cart horses—were Lords Talbot and Derby, and Mr. Crisp; but as the noble lord on his right (Lord Talbot), with that modesty which always distinguishes his conduct, had expressed a wish not to have his name again brought before the meeting—(*loud cheers*)—he begged to propose the healths of the other two winning candidates, Mr. Crisp and the Earl of Derby (*Loud laughter*).

Lord Stanley rose amidst great cheering, and said—Mr. President and gentlemen, I can assure you that when I entered the room this day, nothing was further from my imagination than the thought that by any possibility I might be placed in the situation I now am, by having to acknowledge the honour you have done me by drinking the health of one so near and dear to me (*Applause*). Gentlemen, the description of horses with which I am connected, is somewhat different to that which has been the means of calling me before you at this moment (*Laughter*). But, I confess, when I look to the different character of my father's horses, though the thorough-bred are more swift, it is full as sure to stick to the cart breed after all (*Hear, hear*). I can assure you, gentlemen, that I came here little expecting to find my father a successful competitor. It may be in our farm at Knowsley there is some judgment exercised, or there may be a laudable degree of modesty; but it is somewhat singular that the only two animals which they have thought proper to enter the lists with, have both been fortunate enough to carry away prizes (*Cheers*). I am sure this circumstance will be gratifying to my father, and I am sure it will encourage him greatly in those efforts which he has long been making to encourage both among his own tenants, and generally for the improvement of agriculture. He thought it worth while to mention that the colt for which one of the prizes had been awarded, was not, as might be inferred from what had been said by Mr. Crisp, of the Suffolk breed, but was one of the grey Clydesdale breed, and had been fortunate enough, though only two years old, to be a winner of prizes before, and believed this to be the third prize he had carried off (*applause*). He could only hope that his merits would increase with his age, and that he (Lord Stanley) might have the pleasure of seeing him go on, till at last, with that kind feeling and respect which their judges had so generously paid to old age to their report just read, it would be classed among the old animals which were generally commended (*laughter and applause*).

The Chairman said the next toast he had to propose was the healths of the winners in class 9—the class of pigs; and the only class, he was sorry to say, of which their president had any practical knowledge. (*Laughter*). He proposed the healths of Mr. Umbers, of Darleston Hall, and Mr. Barnard, Gosford Hall, Essex.

The next toast was the healths of Mr. John Forrest, of Stretford, near Manchester, and Mr. Charles Tempest, of Broughton Hall, near Skipton, Yorkshire. (*Drank with applause*).

The Chairman said the last list placed in his hands was the list of prizes for agricultural implements. It was a difficult task to select the names of those who most deserved their thanks on this occasion, but he must observe that there was no fitter name to be selected from it than that of Lord Ducie—(*applause*)—who, he regretted to say, had been prevented by severe illness from being present. That nobleman had done much for the improvement of agriculture by directing the attention of his tenantry to the improvement of agriculture. His lordship not being present, he should select the names of the gentlemen who appeared most often on the list—the names of the oldest firm of agricultural implement makers in this country. He begged to propose the healths of Messrs. Ransome, of Ipswich. (*Cheers.*)

Mr. Allen Ransome briefly acknowledged the compliment, expressing his gratification that agricultural mechanics were beginning to be more generally appreciated.

Lord Stanley again rose, and was received with protracted rounds of applause. He begged to assure Lord Spencer and the gentlemen that, whilst he could not refrain from expressing his grateful thanks for the flattering manner in which they had received him in the presence of so many strangers, as also in the presence of so many more gentlemen of his own county and neighbourhood, he felt he should not be making a just return for their kindness were he to obtrude himself upon their notice in speaking upon a subject which he felt his own incompetence to handle; but he had some right—if an acquaintance of upwards of thirty-three years could confirm such a right, to propose the next toast, the health of his honourable friend who sat on his right—the chairman. (*Hear, hear, and loud cheers*). But while that long acquaintance gave him some right and some cause to speak of him in terms which he dared not then use—his (the chairman's) presence making him refrain from using terms he otherwise might—it was some relief to know that any terms of praise in such a company were unnecessary. (*Applause.*) To most of them he was well known. (*Applause.*) They had witnessed the perseverance, the unwearied diligence, and the zeal with which he had devoted himself to the promotion of practical science, and the interests of English agriculture generally. They had seen him a most active fellow-labourer in that field in which they were severally labouring; they had witnessed his exertions in the cause of agriculture; they had witnessed the peculiar, quiet, unassuming, and gentlemanly demeanour with which he had always conducted himself in carrying on the business of the evening as their president. (*Applause*). In their hands, therefore, he felt he might justly leave his honourable friend, and without a word more he begged to propose to them the health of their president, and he proposed that it be given with three-times-three cheers. The cheers were heartily given, his lordship giving the "hips."

The Chairman,—Lord Spencer and gentlemen: It would be really superfluous in me to return you my deepest and most heartfelt thanks for the honour you have done me, because it is so obvious that, for a private gentleman, of no claims whatever, to be placed at the head of the agricultural body of England, is an honour which cannot be too deeply appreciated. (*Applause.*) Our endeavour, gentlemen, according to the motto proposed to us by Lord Spencer, is to "unite practice with science." All I can say is, that I believe during the three years in which we have existed as a body, we have acted strictly upon that principle. (*Loud cheers.*) And I am satisfied that that principle was thoroughly answered. (*Hear, hear.*) When we were first formed there were many subjects of inquiry which they proposed for themselves to pursue; they had steadily pursued them, and there was not one of them, he believed, on which they had not either made some important improvement, or on which, as the next best thing they could do, they had not sought to ascertain, from the best sources, the means of making some improvement. (*Hear, hear.*) If he might be allowed to go back to the modes of inquiry they professed to themselves in the first instance, he might say that they went to the root of the matter — the improvement of the soil itself. They were satisfied that unless they brought that soil to a healthy condition — unless they drained off the superfluous waters—(*hear, hear*)—it was in vain for the utmost skill of British husbandry to be expended on it. (*Hear, hear, and great cheering.*) They were indebted to a gentleman of a sister part of that empire, whom they had the pleasure of seeing among them—Mr. Smith, of Deanston—(*great applause*) — for calling the attention of the cultivator to the importance of that improvement. (*Applause.*) While the condition of the soil has been attended to, modes of tillage have also been discovered—modes of tillage in themselves expensive, and which are difficult in pursuit—by which we may double the produce of the soil. (*Hear.*) In his journey to this place he travelled over a large tract of country, and he could not but see that while the best skill of the husbandman was bestowed upon the soil in its present state, with the assistance of his landlord he might be able to do much more. (*Great applause.*) They were practical men—that was the character of their society—and therefore he was not afraid of tiring them by going into details. In passing along the railway he observed narrow ridges, with very excellent crops upon the top of the ridges (*hear, hear*), but very little in the furrows, and those furrows occurring frequently (*hear, hear*), and exciting the attention of the agent of his noble friend on his left (Lord Stanley); he had come to the conclusion that the present crop was about fifteen bushels to the acre, and that, if fairly drained, there would be no difficulty in making the same land produce upwards of thirty bushels. (*Hear, and cheers.*) Now this brought him to one of the best practical improvements this society had discovered—he alluded to the discovery made by a gentleman from Huntingdonshire, by which the price of draining tiles had been reduced, so as to enable draining, which would before have cost 40s. per acre, to be done for 22s. He was glad to find the farmers of Huntingdon had appreciated the value of this discovery, and were giving the inventor a public dinner as a reward for his meritorious labours. (*Hear, hear.*) It was unnecessary for him to state to them the importance of such a discovery as that. Then when they had brought the state of the soil to a healthy condition, the next object was to plough it up well. His friend Mr. Handley, than whom no one, he might venture to say, deserved more of the farmers of England (*hear, hear*), in his experiments upon the subject of ploughing, was led to believe that those guided by wheels were superior after all to the swing plough. (*Hear.*) It was said that the wheels made lazy ploughmen, but after all, if the work was done, it mattered little to the farmer that the men had not to work so hard. He (the chairman) was led to pursue the same experiments himself, and he found the difference of draught as the difference between 14 and 21, or in other words of two horses and three. (*Hear, hear.*) His noble friend (Lord Stanley) knew the difference between 4lb. and 8lb. on another sort of horse (*laughter*)—he left them to judge the difference between two and three hundredweight. (*Hear, hear.*) When the soil was tilled, the next thing was to sow the seed, and they all knew that there was some connexion between that and the produce of wheat. (*Hear.*) He had been told that as the yielding quantity of wheat increased the mealing quality decreased, but it was well known that the decrease of the latter was not in proportion to the former, and therefore this was important. (*Hear, hear.*) He would now pass to land agriculture, and they all knew that an important chemical experiment—the application of nitrate of soda—was now making. That experiment, in its results, had hitherto been very doubtful—on some lands being not very successful, on others being altogether a failure. The experiment ought to be fairly tried. If he were to go through all the branches of agriculture, he thought he would show that this society had done all that was practicable; and with regard to the diseases which applied to plants, they all knew that these diseases were well enough known, but little was known of the remedy. (*Hear, hear.*) Some important inquiries were in progress to ascertain this information. There were many other branches of the subject on which he might dilate, and he trusted on another occasion they should be able to show what that society had been able to effect, as well as what it was likely to do. They had enlisted in their ranks men of established character and reputation—men who stood high in the estimation of their country. If they went to Oxford they found that there a professorship of agriculture had been instituted—and who more fitting to fill such a seat than Dr. Daubeney? (*Applause.*) They had also the pleasure of seeing among them one of the leading lights in that university that night; they had rendered it unnecessary for him to mention the name of Dr. Buckland. At Cambridge, they had the professor of botany, Professor Henslow (*cheers*)—who was well known through the society's journals: while in the new University of Durham they were enabled to rank among them Professor Johnson, who devoted his talents to lecturing on agriculture, and to sound practical knowledge, adding the wonderful facility he possessed of rendering what he taught easily understood. (*Tremendous applause.*) If they went to Scotland they had Dr. Playfaire, who had translated the work of the first chemist of the age for the use of the English agriculturist; and he had no doubt if they went on, and kept practice in view, and made science subservient to practice, they had a long career of improvement before them. Nothing would give him greater pleasure than to see science revealing its secrets on one side, and nature hers on the other, and those united being brought to bear on the condition of the English farmer, and with him improving the condition also of all other members of society. (*Cheers.*)

Mr. Handley, the President elect, was then called on by the chairman to read the report of Professor Sewell on the recent epidemic which had made such destruction in cattle throughout the country. The report was formed on about 600 communications from different parts of the country. The report was read at length by Mr. Handley.

The Chairman then announced the award of the following prizes for essays for the year 1840:—

1. Food for Labourers.—Ten Sovereigns, or a Piece of Plate of that value, for the best directions

to enable labourers to prepare wholesome, nutritious, and palatable food, in the most economical and easy manner—to Mrs. Gardiner, of Mitcham, Surrey.

2. Application of Lime.—Ten Sovereigns, or a Piece of Plate of that value, for the best account of experiments on the application of lime as a manure —to C. W. Johnson, Esq.

3. Improvement of Peat Soils.—Twenty Sovereigns or a Piece of Plate of that value, for the best essay or report on the most successful means by which the improvement of peat soils may be effected —to C. W. Johnson, Esq.

4. Agricultural Mechanics.—Fifty Sovereigns, or a Piece of Plate of that value, for the best essay on the present state of agricultural mechanics, and on the improvements of which the various implements now in use may be susceptible—to John Morton, jun., Esq.

After a brief pause, the Chairman rose, and proposed the health of Earl Spencer, which was received with loud applause, and drunk with three times three, and one cheer more.

Earl Spencer, on rising to respond to the toast, was received with loud cheers.. His lordship said he thanked them for the high honour they had conferred on him by drinking his health, and for the manner in which the toast had been received. But if he was obliged to them for that mark of their approbation, he was still more obliged to them for the increased support they had given to the society. He felt highly gratified at the increased number of members who now belonged to it, and at its extension throughout the kingdom. *(Hear, hear.)* He (Earl Spencer) had stated at the first formation of the society, that even in those parts of England where the best mode of farming was adopted, improvement might still be made; and the result of the operations of the society had fully borne out his observation. (*Hear, hear, and loud cheers.*) The president had told them of the progress of the society, but as yet they had not done enough to deserve the name of such a society. They had, however, done a great deal by directing the attention of farmers to the subject of improving the mode of cultivating their farms; they had done that which he was sure all of them who like himself were in the habit of frequently mixing in the society of farmers, must rejoice at—they had extended the desire of knowledge. *(Loud cheers.)* Whether, however, the society would now or within a year or two lead to any great result was more than he could say; but one thing was certain, it must ultimately be beneficial to all classes. *(Applause.)* When the epidemic which had spread among cattle first became general, his lordship thought the society ought to circulate amongst the farmers a paper which would teach them how to treat it. They applied to some of the most eminent persons in the country, and having obtained their opinions, a paper on the subject had been circulated, and it had been attended with the best possible effect. (*Cheers.*) He (Earl Spencer) thought, from the great number of cattle attacked, that by receiving reports from different parts of the way in which the disease had affected cattle, some conclusion might be come to as to the mode of treating it. *(Hear, hear.)* They had heard the report read, which had been founded on the communications received from the most competent men in the country to give their opinions on the subject. Those reports had been placed in the hands of Mr. Sewell, than whom no man in the kingdom was more capable of giving an opinion on the subject; but from the contradictory and conflicting statements which had been made, the society had not been able to effect any great good; but although the society had been unable to accomplish any great good, it had prevented many of the farmers from trusting to the quackery of horse and cow doctors, who did so much mischief to the farmer. With respect to the other points referred to by his honourable friend, he could say that the society had collected a mass of information of the highest importance. They had a report respecting the turnip fly, which shewed the fallacy of the common notion that the fly existed in the seed. The fly was an insect of hard skin, did not grow, and consequently would not be formed in the seed. That report showed the natural history of the fly. It was traced through its different stages, and the best means were pointed out to counteract the mischief it inflicted on the crop, and perhaps eventually the society might be able to point out means to counteract its ravages; for there were scientific men in the society who were assisting in the investigation, and they might depend upon it that effects would be produced quite incalculable at the present time (*applause*). His lordship said he did not repent of the course he had taken in recommending the formation of the society—it was impossible, after seeing that meeting; and when he contemplated the splendid assemblage he expected to witness to-morrow, to do so. He should always have great pleasure in looking back on that period of his life, and should feel the greatest happiness in reflecting on the fact of his having been the first person to propose the society *(loud cheers)*. His lordship concluded by again thanking them for the honour done him, and sat down amid loud cheers.

The Chairman then proposed the health of Mr. Smith, a gentleman from Scotland, who had passed his life as an agriculturist, and whose experience and intelligence had been of great service to the society (*loud cheers*).

Mr. Smith returned thanks for the honour conferred upon him. Whatever services he had done the society, were amply repaid by having his health drank in such a meeting as that—by having those services appreciated by the Royal Agricultural Society of England, and by the farmers of England (*loud cheers*). He had turned his attention from cultivating the manufacturing arts to agriculture. He had no doubt the farmer, like the manufacturer, if he had better tools, his work would be better done, and it was quite evident, on viewing the implements which had been exhibited that day, there was a wide field for improvement (*applause*). He felt assured that if the mechanical skill of England were directed to that point, and he had no doubt it would be by that society, a vast improvement would soon be the consequence (*cheers*). He felt proud to think that they had been able to contribute something of advantage to the English farmer from his poor country of Scotland. He felt also gratified in believing that the society had been formed in some measure on the Highland Society of Scotland—a society which had produced considerable advantage in that country by bringing into a better state of cultivation the poor land of his country. He had no doubt that in this country, where there was more capital than in the north, ere long England would become a perfect garden. The improvement of the agriculture of this country was most important to the commercial and manufacturing interests—(*loud cheers*). They cried out for cheap bread, and justly so, too; but how so well were they to get cheap bread as by the improvement of the lands around them? *(Continued cheers.)* Every farmer knew well there was nothing so good in agriculture as the consumption of his own produce on his own soil. *(Hear, hear.)* The same principle which was good in small things would also hold good in larger. *(Loud cheers.)* It was to the advantage of the farmer that the grain he required should be produced at his own door, and there consumed; and it was equally beneficial that the manufacturer should have his manufactures consumed in his own country, leaving its enriching influence on the ground. *(Cheers.)* This country had been able to bid defiance to the cheap labour of all other countries on the earth, and so would she continue. *(Hear, hear.)* In the improvements which had been made, no doubt they had been led on by a selfish feeling to a certain extent, and in all questions of public benefit no doubt such a feeling must exist. People must look to their own interests or they would do little for the benefit of the public. It was, however, quite clear, that in order to have bread cheaper, the best mode was to produce a greater quantity, because the more that was produced the cheaper it would be to the consumers. *(Hear, hear.)* He would advise the society, if he might be allowed, to avoid two errors into which societies of that kind commonly fall—not to discourage persons who came forward with improvements, nor to be too hasty in rejecting such as were offered to their notice. He had frequently seen things offered to the notice of such societies which at first appeared exceedingly absurd, but in the end turned out to be really the germs of the greatest improvements. At the same time he would advise competitors, if at first their implements were not noticed as they might imagine they deserved, not to be discouraged, but to persevere, and eventually they might depend on succeeding. *(Cheers.)* In taking a survey of this county, and more especially in this neighbourhood, there was great room for improvement, but that meeting would doubtless sow good seed, and in due time an abundant crop would be reaped. *(Hear, hear.)* There was no principle for producing improvements better than the itinerating principle—it excited a spirit of inquiry, and, by the converse with others, it improved men's minds, and by competition faculties were brought into exercise which would otherwise have lain dormant. It was, therefore, that he approved of ploughing matches and other modes of competition amongst farmers and their servants. *(Cheers.)* He had had the good luck of bringing forward some implements on the present occasion, and if spared, he hoped on future occasions to exhibit still further improvements. *(Loud cheers.)*

The chairman and the principal portion of the guests then left the room, and the meeting separated.

GRAND DINNER IN THE PAVILION.

The grand dinner of the members of the society took place on Thursday, in the pavilion in the yard of the Old Infirmary. Four o'clock was the hour appointed, but long before that time the spacious structure was crowded. The arrangements were admirable, both for ingress and egress.

The dinner, which was of course cold, was supplied by Mr. Radley, of the Adelphi Hotel. 2,800 guests sat down.

Shortly after four o'clock the chairman of the Society, Philip Pusey, Esq., M.P., entered the building, accompanied by the principal guests, and took the chair. At the same moment the vice-chairman, Henry Handley, Esq., entered, and took his seat as vice-president.

On the right of the President were seated—the Mayor of Liverpool, Lord Sandon, M.P., Lord Ingestre, M.P., Lord F. Egerton, M.P., Earl Spencer, Sir Charles Burrell, M.P., Sir Charles Morgan, Lord Lisburne, Sir Thomas Brancker, J. Wilson Patten, M.P., and Professor Daubeney. On the left of the President were—Lord Stanley, M.P., Earl Talbot, the Earl of Chichester, Professor Buckland, Lord Mostyn, Professor Johnstone, the Earl of Aylsford, the Hon. L. Mostyn, M.P., Sir John Mordaunt, M.P., Robert Palmer, M.P., Viscount Emlyn, M.P., Lord Blantyre, and Thos. M. Milnes, Esq., M.P., &c., &c.

The dinner concluded about a quarter past five. The cloth having been withdrawn, and *Non nobis domine* chaunted,

The President rose to propose the first toast. He said—Mr. Handley and Gentlemen: Let us drink our first toast, that toast which, as loyal and dutiful subjects, we are bound to drink, and which we are ready and glad to drink—"The health of our Sovereign, Queen Victoria, with loyal, and dutiful, and hearty honours." *(Three times three.)*

National Anthem, "God save the Queen."

The President said the next toast which they were bound to drink, and which they were most ready to drink, was the health of Her Majesty the Queen Dowager, the Prince Albert, and the rest of the Royal Family. *(Three times three.)*

Lord Stanley then rose, amid deafening cheers, which lasted for some minutes. I have received (said his lordship) not the permission, but the commands of your chairman to propose to you a toast; and I venture to assure you in all sincerity, notwithstanding the kindness of the reception you have given me personally, that nothing short of that authority, and of those commands, would have induced me to have obtruded myself on the attention of a meeting like the present, and on a subject such as the present, on which I am deeply and painfully conscious that it would be the height of presumption in me to hope to add anything to the information of an assembly which I have attended with an earnest desire of manifesting my concurrence in the great objects which it has at heart, and in the hope that I should not be called on to convey, but that I myself might receive, much practical knowledge from its proceedings *(loud cheers)*. But, gentlemen, it is impossible for me to look around me at this splendid assemblage that I see here collected, without congratulating you—without congratulating the country at large, on the probable, nay, certain effects of the institution of this valuable society; and I feel convinced, in proposing to you to drink success and prosperity to the Royal Agricultural Society of England, that, in your zeal and enthusiasm for the toast, you will, if not forget, at least forgive, the deficiency of the proposer. Gentlemen, let me, in the first place, congratulate you, in the name of English feeling, and in the name of sound national sense, on the practical proof you have this day exhibited of the wisdom of that which is the fundamental, as I hold it, and essential rule, for governing the proceedings of this society, that anything like an approach to political contention, or questions of party politics, be altogether banished from your views *(Loud cheers)*. It is a matter of no little congratulation that, when the country is recovering, and hardly recovering, from the ferment inseparable from a dissolution of Parliament, and a general election, men of all sentiments, of all political parties, of all opinions, are met here in harmony to deliberate and consult on one of the great national interests of the empire *(cheers)*; and especially on the present occasion, and in this place. Most gratifying must it be to find that in this the greatest commercial town of this the greatest commercial country in the universe, an assemblage unprecedented in point of numbers, unrivalled in point of respectability, character, and station, are met together, and graced by the presence of the principal magistrate, for the purpose of doing honour to the cause and supporting the interests of English agriculture *(Loud cheers)*. Gentlemen, in such a meeting it would be idle in me to descant on the immense national importance that attaches to the agricultural interest, or on the value of that noble and honourable profession or science, (call it which you will) on which devolves the arduous, but, at the same time, vitally essential task of providing the prime necessaries of life, meat and bread, for a population redundant almost to excess, and increasing its numbers (while it augments its wealth as a commercial and manufacturing country) at a rate little less than one thousand for every day that passes. But, gentlemen, I must fairly say to you, that in my judgment, and in my conviction, so far from looking on it as a discouraging, I look on it as the most encouraging symptom and character of the times, that agriculture, at least as a science—whatever it may be in point of practice (and on such matters science and practice are intimately combined)—and regarded in its probable results, and in connection with the great objects which it is designed to accomplish, is yet almost in the infancy of its condition. We look back at the present period with a smile of indulgent pity on the public efforts which were made by agriculturists at a period not long gone by, to advance the interest to which they belonged. And I venture to predict that, at no very advanced period, our successors will regard—I hope with some indulgence, but at the same time with much surprise—the limited views which even now we entertain, compared to what, half a century hence, they will have accomplished. And let us give praise and honour where honour is due; for I believe that to our northern brethren we are indebted for the progress which has of late years been made in the science of agriculture. Labouring under the disadvantage of a soil of certainly not more than average fertility—of a climate even yet more ungenial and variable than ours, in spite of these obstacles—nay, perhaps, gentlemen, on account of these very disadvantages—they have been stimulated by their prudence, foresight, skill, and industry, to combat with and overcome them, and have thus set an example of what can be done by persevering against difficulties of every class *(loud cheers.)* I give the agriculturists of Scotland the credit I believe to be their due; but I also give the agriculturists of England the credit that is due to them for abstaining from any display of ungenerous jealousy or hostile rivalry, and for the absence of any unwillingness to follow a good example when once fairly set before them *(cheers)*. From the time that Scotland took this lead, we were not ashamed to employ Scotch bailiffs on our estates, to adopt the Scotch plough, and to inquire into the Scotch system generally; and, having found that that system was a sound one, the agriculturists of England were not slow to follow what practical experience and theoretical knowledge combined to demonstrate they might follow with advantage to themselves, and for the interest of their country *(cheers)*. Gentlemen, the first, the great step, without which improvement was hopeless, was achieved when the agriculturists—both landlords and tenants—began to be sensible of their own deficiencies, and to believe that there was something better, more advantageous, cheaper to themselves, and more productive to the country, than the system theretofore followed, and when they commenced the generous rivalry of competition with those whom they had previously looked on as instructors. That first step so followed up led to great practical improvement. It met with a cordial concurrence on the part of all classes of British agriculturists. A pledge for its active support was called for in various parts of the country, with renewed success; but nowhere would this demand for improvement have been seconded and confirmed, if it were not for the local agricultural societies of different districts, which, in a more limited circle, and at an earlier period, conferred those benefits on agriculturists which the Royal Society was now spreading over a larger and proportionably more useful sphere. When I say a more extended and proportionably more useful sphere, I mean to refer to that extended competition which is the basis of all improvement, and the best stimulant to success. And as each farmer, where no agricultural society exists in his neighbourhood, is naturally inclined, if he take any part at all in looking after his stock and land, to be too self-satisfied as to their condition, so the local agricultural societies confined within small proportionate limits the powers of competition, and tended to create an undue degree of self-applause on the part of those who, in their limited sphere, found themselves superior to their neighbours *(hear, hear)*. But when, by the general amelioration of the system throughout the whole country, competition is extended far and wide, and when (looking to the immense facilities which are now afforded of bringing the largest articles from one portion of this empire to its most distant quarters) the agricultural society has the power to combine in one spot specimens of stock which, I believe, it will be very difficult to match, these agricultural societies will be shown how much they have to do to achieve in their own districts even that degree of perfection which has been reached by their neighbours of other districts *(cheers)*. It was impossible for the most unpractised eye to have visited the show-room this day without being struck with the immense superiority of the stock over that which many of those I address recollect to have seen exhibited on the spot from which I now speak. But, gentlemen, I shall be far from saying that this is the main object or the principal advantage of this society. On the contrary, I consider as of minor importance—as an object of a very secondary nature—the exhibition of stock and improved breed of cattle displayed in the show-yard. I know how incompetent I am to offer advice or to give an opinion on these matters; but this I know, that in this neighbourhood, and I doubt not in many parts of the country, a gross and grievous error prevails among farmers of preferring the horse, or breed, or race, whose services may be obtained at the cheapest rate, rather than choosing the animal of the best breed and the greatest merit. A more fatal error cannot be committed, or a stronger illustration given of the penny-wise and pound-foolish philosophy. It is allowing a few paltry shillings to induce you to overlook the disadvantage of breeding from a bad stock, and incurring the expense of rearing worthless cattle, while, by a small additional outlay at first, you may be morally certain you will have a good return for your money. But, gentlemen, I again say that I consider the exhibition of stock as of very secondary importance among the objects contemplated by this society. I have said, too, that agriculture, as to its possible capabilities, is yet in its infancy, and I am firmly persuaded that the man who in these times should form a correct estimate of those improvements in our productions as they will be seen within a century hence, would be looked upon not as a wise and superior calculator, but as a visionary enthusiast, and as one who speculated on impossibilities. Why, gentlemen, it is not perhaps many years ago when agriculture would be scarcely dignified with the name of science. It was looked on as a calling of mere routine, to be conducted on the good old hum-drum principle, that the son should adopt the father's and grandfather's course, carry on his operations in the rudest manner, with the least possible economy of labour and expense, and producing what had been produced for years and centuries on the sensible doctrine, that what was good enough for their fathers and grandfathers was good enough for them (*hear and laughter*). I hope that better times have come, and that in the capabilities of the soil, and the means of working it, what satisfied our fathers will not satisfy us; or, if it did, that our children and grandchildren will not be found equally complaisant (*Hear, hear*). But, gentlemen, I hold it one of the most important points connected with this great society, that it has been made instrumental in making that spirit of inquiry which, if allowed to take deep root in the minds of the agricultural population; for it was precisely at the moment when it first arose, that my noble friend (Earl Spencer) (*Loud cheers*)—a name which I perceive you agree with me in thinking never can be pronounced without respect and cordial approbation in any assembly of Englishmen who know how to value sound practical sense, the most intense and universal benevolence, and the strictest and purest integrity—it was, I say, at that fortunate moment, that my noble friend conceived the project of instituting an English agricultural society, and extending thereby the benefits of mutual information and competition throughout a larger sphere than had ever before been attempted in this country. Gentlemen, even one of our most ordinary farming operations, while it forms a subject for regret on the one hand, is yet one from which we may derive hope for the future, on the other. I do not deny that much has been done within the last twenty years, but much remains undone which I have no doubt will yet be accomplished; and in the departments of science connected with agriculture, not only have many new discoveries been made, but they have been explored, investigated, and ratified. Gentlemen, take the very simplest operation—take that which is the foundation of all agricultural improvement—take that without attention to which your outlay is actually thrown away, and if you examine its state generally, I believe I may say for England—I know I can say, with regret and shame, of my own and some neighbouring counties—that from the imperfectly constructed drains the course of the water is choked up, and this, combined with a soil of natural tenacity and extreme retentiveness, causes to overflow for a part of the year a superabundance of matter which greatly obstructs the productiveness of the soil, and which, extending over large tracts of ground, contributes, in my conscientious belief, to alter the character of the climate and atmosphere. It thus at once checks the fertility of the soil, and prevents those influences which are necessary for bringing our crops to maturity (*Hear, hear*). We are not here to pay compliments, but to speak the truth, and if we admit this acknowledged defect, and that great supineness has been displayed on the subject, have we not grounds for a confident expectation that greater—almost incalculable—advantages will flow from a more enlightened system? (*Cheers*). The man would be thought to have conferred no trifling benefit on his country who added one bushel of wheat to the produce of every acre of such land, and yet I am confident I speak within compass when I say that there are 100,000 acres capable of an improved cultivation, in the first instance that would yield 5, 10, and 15 bushels an acre more than they do at present (*hear, hear*). Gentlemen, I feel that in dealing with these objects, I run the risk of wronging this vast assembly, who are much more competent to instruct me on such matters than I am to speak to them (*no, no*). Yet it is not of a little importance to see what may be achieved, not by any extraordinary means, but through the ordinary exercise of that knowledge which—if all do not possess it—is in the power of all to acquire. When the process of draining is expensive and protracted, I grant that it may seem to the farmer a marvellous and almost appalling proceeding; yet I am satisfied of this, that while no landlord can expect a tenant to enter on an undertaking so extensive without his concurrence and assistance, and without his bearing, let me even add, the principal portion of the original outlay, I am fully persuaded that no bank—no commercial speculation—no new estimate of capital is so safe, sure, and provident, as even borrowing the capital for the purpose of investing it under the ground of your own soil (*hear hear*). Now, next to drainage, the point of importance which would probably follow, is the subject of manure. On this subject what discoveries have been made already—how much has science been gradually adding to the stock of information! how much has practice added to the means of economising, and of advantageously combining all the substances which tend to form good earth! and yet, ordinary as this may seem, how great doubts yet remain to be solved, and that require investigation concerning it; calling in aid the highest branches of science, and the speculating of the practical agriculturist, as to what manner, in what proportion, having regard to what clayey affinities of soil, and looking to particular times of application, manure should be administered, so as to promote the fertility of the land of England. If any one still doubts of the fresh discoveries made by science day after day, what fresh manures are applicable to our soils, and that different classes of lands require wholly different treatment, I would refer him to an import, hitherto unheard of, which has been made into this very port within the last two months, and which consists of the deposit made by certain fowls of the Pacific ocean. This manure has been imported to fertilise the fields of England. What a field does this open for future inquiry, and who shall say what will be the result of future inquiries as to the influences which may affect the various subsoils, and that which is uppermost? Here is a field wholly new, almost untrodden, and which yet is one likely to be productive of the greatest benefit, when practical investigations of this nature are entered on by men of the greatest learning and science in this country. I pass by many other topics—the due selection of seeds—the investigation of the mysterious laws of nature—the due rotation of crops, which after a certain cycle of years, seems absolutely necessary; but I ask you to turn your attention to the immense advances which have been made, and yet remain to be made, in the application of mechanical power for the purpose of diminishing labour, reducing the expence, and increasing the facility of cultivation. And I hold it to be one of the most encouraging symptoms at the present day, that men of the highest eminence of genius and talents are turning their attention with great and persevering success to the improvement of those implements of husbandry, which, in former times, were considered capable of little if any improvement; but which, by saving labour and expense, now enable the farmer to add to the productive powers of this great country. I have passed summarily over the principal topics connected with agriculture, and yet see what a wide prospect it presents. Agriculture not a science! Why there is hardly a science which is not her handmaid, and does not make her subsidiary offerings. Zoölogy, botany, chemistry, mechanics, are all brought to bear on the great practical problem which the agriculturist has to solve, what would give the largest return to the cultivator at the smallest comparative expense *(cheers)*. But you will say, in what way is the Royal Agricultural Society of England to assist us in this case? Much in every way. It collects from every quarter information from practical and advice from scientific and theoretical men; and while there is no man so high in the walks of science who can think himself degraded by applying his talents and mind to a subject of such general interest to the country, there is no man so humble, on so small a scale, or in so low a situation, who may not confer a signal benefit to the country, if he will only communicate to the Royal Agricultural Society of England, fully and entirely all the circumstances, the results of any proportion of his own practical experience in his own line. *("Hear," and cheers.)* Gentlemen, it is not to be expected that the writings of scientific men should at once come into general circulation, and be in the hands of the farmers of this country; but fortunately there are farmers—fortunately for this country, there is a class of men of whom I would speak in terms of the highest honour—a class of the gentlemen of this country—men of integrity, of education, and of refinement, capable of weighing the scientific speculations of the wise, and with means and the inclination to apply those means to a practical investigation of the results of those theories. *(Hear.)* While you have such men as my noble friend to whom I have already referred—(*cheers*)—while you have such men in the country as my noble friend the Duke of Richmond—(*loud cheers*)—whose absence from this meeting and the cause of it I am sure will call forth, throughout the agriculturists of the country, and from all the well-feeling and the well-disposed portion of the community, one sentiment of universal regret and the deepest sympathy—(*hear, hear*)—while you have such men as my hon. friend the President of this society—while you have such men as the hon. gentleman whom I see opposite to me, the president elect of this society, you need not fear but that the speculations of men of science will have in them impartial and able judges—will have in them also persons who will practically test the merits of their experiments; and in whom, each in their respective neighbourhoods, may place implicit confidence in the farmers, as they cannot expect to risk the loss of capital in hitherto untried experiments, they will, I am satisfied, at no distant time, be content to follow. Gentlemen, I have been more lengthy than I ought, and much more imperfect than I desired, in sketching out to you very summarily some of the many benefits which are likely to be conferred upon the agriculture of this country by the Royal Agricultural Society of England. (*Hear, hear.*) In wishing it prosperity, I may congratulate you upon its increased, and I may add unparalleled prosperity at the present moment. Last year—the end of two years from its foundation—it numbered about 2,500 members; in the present year it numbers, without distinction of situation and party, or of any consideration except an earnest desire to support the agriculture of this country, no less than 5,000 subscribers, having doubled its numbers in the course of that time. (*Hear, hear, and cheers.*) Gentlemen, it rests with you whether this society shall be enabled still further to extend the sphere of its usefulness—whether it shall be able to go on proportionably increasing its means and extending its benefits. But, from the assembly I see around me, I fear nothing—at least for the neighbourhood of Liverpool and for the county of Lancaster. (*Hear.*) I feel confident that the men who have here attended will not feel satisfied with the compliment of their presence, but that they will give more substantial marks of their approbation, and that, in adding themselves to the number of subscribers, they will feel another year additional and more lively pleasure in drinking that toast which I now propose to them—"Success to the Royal Agricultural Society of England." (*Tremendous cheers, during which the noble lord resumed his seat.*)

Earl SPENCER then rose, and his reception also was most enthusiastic. He said that if now, or at any period of his life, he had felt anything like rivalry with his noble friend in his eloquence and his power of speaking, he should rise at the present moment with the greatest possible distrust and diffidence, after such a speech as that which they had just heard from him. But he (Lord Spencer) had no pretensions of that kind. He came before them simply to propose to them that in which he knew he should have their entire concurrence in his proposition, and he knew that they would concur in the toast which he was deputed to propose to them, with as full satisfaction and as much cordiality as if he were able to propose it with the most powerful eloquence. *(Applause.)* The toast which he was deputed to propose to them was, "Success to agriculture, to manufactures, and to the commerce of the country." *(Cheers.)* He knew enough of those whom he was addressing—he knew enough of their feelings towards their fellow-countrymen—he knew enough of their feeling for the general benefit of the community at large—to believe that if he were only to appeal to them to drink success, not only to the line and to the profession and science in which they were themselves engaged, but also to those in which others of their fellow-subjects were engaged, he knew that they had such sympathy for the general welfare of their fellow-countrymen, that it would not be at all necessary for him to add any comment, or to do anything to induce them to concur with him in that toast. *(Applause.)* But even if he had felt any doubt of this—which he did not—he would say that he addressed them, and asked them to concur in this toast for their own individual interests. (*Hear, hear.*) It was for the interest of agriculture in this country that the country should be wealthy—that it should be prosperous in every branch, and throughout its whole extent. He therefore believed that there was no toast on the paper laid before them more consistent, or more closely united with the objects of this society, than that which called upon them to drink success as well to commerce and manufactures as to the agriculture of the country *(loud applause)*; for how could they hope to carry into effect the objects of this society, which was to extend scientific and improved agriculture throughout the country, without wealth and capital to be applied to the improvement of agriculture? Every thing, therefore, which promoted the wealth of the country—every thing which increased the wealth of the consumers, increased the prosperity of that business in which they were all engaged. (*Applause.*) He would not, therefore, detain them by pressing this fact upon their attention, but permit him to say some few words on the present state of this society, and on the exhibition which they had had at their present meeting. His noble friend had most properly stated that the main and principal objects of this society were not confined to shows of cattle, or merely to the improvement of stock, but it was undoubtedly, one of the main objects of agricultural improvements that they should improve the stock which they reared, and should be enabled to bring it to market early, and at a cheap expense, the animal produce which they brought forward. These shows, therefore, though certainly not the principal and main object of the society, were of great importance amongst the objects which they had in view. They were important in themselves, as they showed what skill and attention could do in improving the breed of domestic animals, and they were important as a means of collecting together such an assembly as he had now the honour to address. With respect to the present show he should say that, in his opinion, it was the best show they had had at any of their exhibitions. He knew there were some who doubted this, but he was quite sure that if there were such even, they must admit that there had been no falling off. (*Hear, hear.*) In his own opinion the show was greatly improved. They had had in some of the classes an exhibition of stock which had surpassed anything that he had seen in those classes, and if he might be allowed to trespass on their attention he would allude to some of them. He was speaking now as a practical farmer, he was speaking from his own practical experience, and whilst he was willing to leave to the able and eloquent speech of his noble friend the general interest of the society, he (Earl Spencer) felt more in his own sphere, more in his own element, in speaking to them practically on the stock which had been laid before them. He would mention one animal, and he was sure they must have observed it as well as himself. He called their attention to a yearling bull, of the Hereford breed, exhibited by Mr. Walker. He thought that young breeders would do well to examine that bull, for in it they would see all the points which should be sought in such an animal. With respect to breeding-stock he would call their attention to a cow, bred and exhibited by Mr. Booth. With respect to sheep—both South Downs and Leicesters—there were many of extraordinary merit. One in class 3, exhibited by Mr. Lugar, was one of the most extraordinary animals of that breed that he ever saw. Some of the South Downs exhibited—a very large proportion of them indeed—were excellent; but he would particularly call their attention to one of the shearling ewes, exhibited by Mr. Webb. If they looked at these animals they would see to what perfection breeding could be brought. Those who wished to improve themselves in the knowledge of what animals could be brought to, need only look at these animals, and he thought they would see in them what, in shape and quality, they ought to endeavour to obtain. Having said thus much with respect to the stock, he ought to address them on another part of the exhibition,—the exhibition of implements,—but his own practical knowledge was not sufficient to enable him to give them any practical information on this subject. With respect to implements, however, they had seen to what mechanical skill and science had brought the ploughs, which their ancestors thought incapable of improvement. The implements exhibited, both for their number, variety, and excellence, were well worthy of the attention and well worthy of the encouragement of all who were engaged in farming. It was undoubtedly with great satisfaction that he had seen such a meeting as the present. It was most satisfactory to him that, coming into the greatest commercial city of this empire, they had been able to show that from every part of the united kingdom, the farmers had come to show the interest they took in the improvement of agriculture, to meet those engaged in the same line with themselves,—to communicate information and to receive information from others in return, because it was undoubtedly one of the merits of this kind of life in which they were engaged, that they never endeavoured to conceal their discoveries from one another. (*Hear, hear.*) Whenever they discovered anything important in the cultivation of the soil, they were always most ready to communicate it to their neighbours, in order that they might follow the example,—and if they had a fault, it was that they were sometimes more angry than they should be when they thought that they were not imitated so quickly as they ought to be. It was therefore of great importance that the farmers should come together at such meetings as this,—a meeting so numerous that he could hardly wish to see it more so. (*Applause.*) He hoped it would continue year after year such as he now witnessed it, exempt from every feeling which could produce difference of opinion,—united in one great object,—the improvement of agriculture throughout the united kingdom. His lordship concluded, amidst great applause, by proposing "Success to the agriculture, manufactures, and commerce of the country. (*Drank with great applause.*)

The Chairman said he had next to propose a toast which he was sure required no argument to enforce it. They had been most hospitably received in this noble city of Liverpool, upon their third meeting, and he was sure they would agree with him that their council had properly selected the place for that meeting, and if they looked to what quarter they could pay their debt of gratitude for that reception, there was but one to which they could turn, and that was the chief magistrate of this city. (*Loud applause.*) The Mayor of Liverpool had exercised the most liberal hospitality towards the council; they had themselves seen in how well regulated a city they had met together—the merit of those regulations must rest with the mayor,—and, without one word more, he knew enough of English gratitude, and of the gratitude of farmers, to propose at once, with all their hearts, and with the utmost honour which they could pay, "The Mayor and Corporation of Liverpool." ((*Drunk with all the honours.*)

The Mayor, (Thos. Bolton, Esq.,) rose to return thanks, and was very warmly received. He said he was deeply sensible of the kind manner in which they had been pleased to notice any little attention which the Mayor and the Town-council of Liverpool had had it in their power to show. He only regretted that they had not more within their command, and he begged, on behalf of the people of Liverpool, to express their gratitude to the noblemen and gentlemen constituting the council, for selecting Liverpool as their place of meeting. (*Applause.*) Though he was himself unacquainted with the science of agriculture, he had that day witnessed a noble show of cattle, and an exhibition of the most perfect implements of husbandry, and when he considered that this meeting was composed of persons from various parts of the kingdom, and that these specimens of cattle and these instruments of husbandry would thus become known to every part of the kingdom, it was a most gratifying thing to congratulate and thank the gentlemen of the Council for making this the place from which so much useful knowledge might be distributed. (*Loud applause.*) After an allusion to breeding stock his worship spoke of the great increase which had taken place in the population of Liverpool. During the last forty years, from which period he had resided here, the population had increased by upwards of 200,000 souls, and he need not mention the great increase and extension of commerce and the enlargement of the port which had taken place. Manchester had also increased its population from various tributary streams, and it was a remarkable fact that notwithstanding this increase, and notwithstanding the great improvements in machinery, and the great diminution which they produced in the amount of labour, there had been, up to the present time, as great a demand for labour as there ever was, and every year, until the last two or three years, had given more employment to human beings than the year which preceded it. (*Loud applause.*) Much had been justly said of the capability of increase for a better mode of agriculture, and he believed that the same remark might be made with regard to the increase of the not less useful art of commerce and manufactures. After adverting to the great advantages possessed by this country in coals and minerals, and in the skill, industry, and enterprise of the inhabitants, his worship again expressed his thanks for the kind manner in which the toast had been proposed and received. He then said that he had a pleasing duty to perform; it was one which he should not have assumed to himself. It was one which had been suggested to him, and by their call he most willingly responded—it was to propose the health of their most excellent president. (*Loud applause.*)

The CHAIRMAN said he was unable to return thanks as he ought, for the honour done to him, and therefore he trusted that they would accept the will for the deed. He had endeavoured to do his duty to the utmost of his power, in the office to which they elected him a year ago, and he rejoiced most sincerely to see around him the evidence that the interests of this society had not suffered by his inexperience (*Applause*). The more he saw of British farming, the more he was persuaded that it occupied the first station in the agriculture of the world, and because he knew and believed it to be so good, he entertained the hope that it would be better still. His hope was founded on this, that they were all agreed to learn from each other. He could tell them nothing which they did not know much better than himself, but there were one or two points to which he would just allude. In travelling from their homes to this place, they had passed a great variety of district, and they could not but have observed how great a portion of the land of this country must defy the utmost energies of British farming so long as it remained in its present state—so long as it was saturated with moisture (*Hear, hear*). He commented on the necessity of a good system of draining—mentioned the improvements in the mode invented by the Marquis of Tweeddale and Mr. Beard of Huntingdonshire, and then expressed a hope that they would avail themselves largely of both these discoveries, and that in the course of a few years they would cease to see the water from the skies all over their furrows and spoiling half their produce. When they had attained to this improvement, they would have done for one-half of England what Mr. Coke, of Norfolk, did for the other (*Hear, hear*). Mr. Coke had enabled them to grow wheat on the light lands of the country; let it be the object of this society to do as much as one individual had done—let it be their object to improve the other half of their country (*Applause*). He had mentioned subjects which conveyed some imputation of blame; he would now turn to others of a more agreeable nature. Coming from the south of England, he had seen with great satisfaction excellent crops of Swedish turnips, which might be seen on all sides of Liverpool. He was told that it was not unusual to grow 35 tons of Swedish turnips upon a single acre. Those farmers who came from the south, when they had grown 20 tons, thought that they had done pretty well. He was afraid that the climate was rather against them, but at least let them try, in fair rivalry, to equal their northern brethren. After commenting on the great importance of increasing the means of feeding stock, by improved cultivation, he said that the great assembly would shortly be dissolved, and he hoped every gentleman would return to his home with an agreeable recollection of the meeting at Liverpool, and with some increase of practical knowledge, which he might be enabled to apply to his own farm. For his own part, he should carry to his home in Berkshire a deep and lasting remembrance of the kindness which had been shown to him on this occasion by the farmers of England; and he had this additional satisfaction that, if he were still allowed to conduct their organ, which he believed to be of great usefulness to the society, he should still have the privilege of applying to all farmers for information on any subject on which he thought the public required information. He knew from experience that that information was not withheld by any narrow feeling of jealousy, but was cheerfully given, and when he ceased to be their president—an office for which he felt his own want of ability ("*No, no*")—he still hoped that he might be the organ of their opinions (*Applause*). He felt great satisfaction in hoping, that when he left that chair he was not quitting their service (*Much applause*).

The VICE-CHAIRMAN said, that in proposing to them as a toast the "Highland Society of Scotland," he was conscious of his own inability to do justice to it; feeling that to the enterprise, skill, and industry brought to bear by that society, nature had been conquered in her most rugged forms, by the successful attempts that had been made in Scotland to counteract the sterility of the soil and the inclemency of the climate. It was the landed proprietors and tenantry of Scotland who had given a national character for the first time to agricultural societies. The success of the Highland Society of Scotland doubtless encouraged his noble friend, Lord Spencer, to propose to the farmers of England the establishment of a similar institution, and most grateful ought they to be for the example. They must look to the Highland Society of Scotland in the light of a parent, and he trusted that that society would see no reason to be ashamed of the offspring now presented to their notice (*Applause and loud laughter*). It was a common thing to wish that such a one might be a better man than his father; and he was quite sure that the Highland Society would rejoice if, in the progress of friendly rivalry, they should even outstrip it, and at all events they would rejoice to hear of the successful meeting of that day. Nothing remained for him but to propose to them the continued success of the Highland Society of Scotland, with which he begged leave to couple the name of Professor Johnstone (*drunk with great applause*).

Professor Johnstone, in replying to the toast, said he had formerly reason to be proud of the honour conferred on him, unexpectedly, by the Royal Agricultural Society of England, in electing him an honorary member, in virtue of which he was entitled to appear before them that day; but he did not expect that that additional honour would have been conferred on him to return thanks for the toast then proposed, and which they had received in so cordial a manner. He could only account for it on consideration that he was situated at Durham, about half way between the Royal Agricultural Society and the Highland Society of Scotland. Although he would have an opportunity at the meeting of that society, in Berwick, of addressing them on the connexion between that science to which he had been devoted and the art of agriculture, yet he did not consider himself entitled to represent that society which existed long before he was born, and of the members of which there existed some who were deeply acquainted with all that the art of agriculture could lay before them, before he had studied the elements of the art. When he had an opportunity of addressing them, he would tell them that in formerly an inimical country, England, there were men more friendly towards them than words could tell—men not only willing to give them credit for what they had done, but, what was a greater indication of friendship, willing to follow their example *(Applause)*. He was surprised that the Highland Society of Scotland should have existed for sixty years without the agriculturists of England following in their footsteps. The learned Professor then proceeded at some length to advocate the utility of bone dust as manure, and to show the benefits derived by agriculture from science, but the meeting got very impatient, and he concluded by thanking the meeting in the name of the Highland Society.

Lord Francis Egerton said he had to request the largest measure of their indulgence, not, indeed, for the toast he had to propose, but for himself. It so happened that public engagements yesterday at Manchester, occupied with private circumstances, had prevented him executing his own wish in attending this celebration at an earlier period, and he only arrived at Liverpool that day in time to cast a cursory glance over the splendid exhibition in this neighbourhood, and to arrive in time for that festivity. On entering that large building, an old and valued friend had put a toast into his hand, on reading it he felt somewhat consoled, for he felt that it required no adornment of language to recommend it to the meeting. If he had had all the time since the last meeting to prepare this speech, he could not have done better than just to name "The Royal Agricultural Society of Ireland." He saw many around him, in every consideration better entitled to offer so distinguished a toast to their attention. It might be that the committee recollected that some years ago he was in some measure connected with that country. Perhaps they knew the fact that in no place was a temporary residence—whatever be the object of it, or whatever be the colour of a man's coat, be it blue or be it red—more sure to make a person depart with a sensible value of the better features of the character of its inhabitants, of the kindness and liberality, the gratitude and indulgence, which they were wont to exhibit to the strangers who visited them with whatever purpose, provided he maintained an average character for integrity in his dealings towards them. *(Loud cheers)*. In conclusion, his lordship said, that in receiving that toast from him, they would forget the unworthiness of one who, in an agricultural subject, had not a right to mingle. He came there with a hope and intention of learning much, but not with a vain and presumptuous hope of raising his voice amongst them. He hoped they would drink to the success of the Royal Agricultural Improvement Society of Ireland.

Mr. Napper returned thanks.

Robert Palmer, Esq., M.P. for Berkshire, proposed the toast, "The town and trade of Liverpool," and hoped the trade and commerce of this great town would continue to flourish.

Sir Thomas Brancker returned thanks. After the many eloquent speeches delivered that evening, and at that late hour, it would be presumptuous in him to attempt to detain them at any length, even if he possessed the ability to do so. He would simply return them thanks, as an old inhabitant of Liverpool, and to express on behalf of the inhabitants, their high gratification at seeing so numerous an assemblage in the town, consisting of the noble and wealthy of the land, and many of the most intelligent farmers of the kingdom. The occupation of the inhabitants of Liverpool they knew to be chiefly commercial, but they were deeply concerned in the agricultural concerns of the community. In fact, it would be absurd to separate the one from the other. *(Applause.)* If one languished the other would languish also; and if one flourished the other would not be long before it participated in its advantages. *(Applause.)*

Dr. Buckland said he was much too anxious to do every thing in his humble power to promote, in the smallest degree, the interests of that great association, not to accept readily the task suddenly imposed on him of performing a duty which, from his situation as Professor of Geology in the University of Oxford, he was very unfit for,—it was to propose the health of the Stewards of the Yard and of the Judges of the Stock. The stewards of the yard were well known individually to them; they were their first Noble President, Earl Spencer, Mr. Druce, his own neighbour, who co-operated so ably with the society at Oxford, and the secretary of their own local agricultural association. These were names which required not one syllable of recommendation from him. The judges of the stock were too many to be personally enumerated, but they would forgive him if he suggested to them the propriety of placing the prize animals on platforms, so that they might be visible to every one—a practice which he had seen advantageously used at Aberdeen, and of producing some gentleman skilled in stock, and universally respected for his skill, to lecture to the surrounding farmers, and to point out wherein consisted the excellence of the stock. After a few remarks on the benefit of draining, he concluded by again naming the toast.

W. Miles, Esq., M.P., of Somerset, rose to return thanks, but as it had become nearly dark, part of the covering of the pavilion was removed to allow the light to enter, but this produced such a draft that it drove the persons from their seats, and those who remained, buttoned up their coats and put on their hats, and much confusion ensued.

The Chairman then called for Mr. Grey, of Dilston, but that gentleman not answering, the chairman rose again and proposed what he conceived to be one of the principal objects of the society, "Success to the agricultural labourer."

The Chairman said there was only one toast more —the health of his successor, Mr. Handley. He (the chairman) left the affairs of the society in his (Mr. H.'s) hands, and he left Mr. Handley in the hands of his friend, Lord Ingestre.

Lord INGESTRIE said he craved their indulgence for two or three minutes while he proposed to them the toast which had been committed to his charge. After having addressed the meeting for some few minutes, he concluded by proposing the health of the "President elect."

Mr. HANDLEY returned thanks.

The toasts of the evening having been gone through, the chairman vacated his seat about half-past eight.

LIST OF TOASTS GIVEN AT THE DINNER IN THE PAVILION, THURSDAY, JULY 22.

GRACE.—"*Non Nobis Domine.*"

1.—The Queen.
2.—The Queen Dowager, Prince Albert, and the rest of the Royal Family.
3.—Success to the English Agricultural Society.
4.—Agriculture, Manufactures, and Commerce.
5.—The Mayor and Corporation of Liverpool.
6.—The Foreign Ministers, and distinguished Strangers.
7.—The President.
8.—The Highland Society.
9.—Royal Improvement Society of Ireland.
10.—The Town and Trade of Liverpool.
11.—The Stewards of the Yard, and Judges of the Show.
12.—The Agricultural Labourer.
13.—The President elect—H. Handley, Esq.

LIST OF AGRICULTURAL IMPLEMENTS, MACHINES, MANURES, SEEDS, ROOTS, &c, EXHIBITED IN THE SHOW YARD.

IMPLEMENTS.

MESSRS. GARRET AND SON, LEISTON WORKS, SAXMUNDHAM.

It may well be said that mechanical skill and enterprise has not been inactive, when we notice the great progress made by Garrett and Son, of Leicester Works, Saxmundham, Suffolk, whose exhibition consisted of every implement required for the cultivation of the various soils, as well as for every other purpose of the farm. We give the following brief account of those implements which have recently been invented or undergone important improvements for the information of our readers.

The drill, No. 36 A., (most perfectly suited to every agricultural purpose for which a drill is applicable) will deposit skilfully upon the most tenacious clay, or rocky soils, or upon the most hilly lands in cultivation, with as much regularity as on the more fertile plains; any description of pulverized manure, per acre, from six bushels to any larger quantity; any corn from two to twenty-six pecks, (and by simply changing the barrel) turnips and every vegetable seed from one to twelve pints per acre. Corn and manure may be deposited together down the same conductors, or through separate coulters which are provided to follow, and it has been ascertained to be very beneficial to the root crop that the seed should be above the manure. The grass seed engine accompanying this drill is applicable to sow at the same time with spring corn and manure, and will do its work as correctly as when used alone. Thus the whole business of manuring, corn and grass seeding, is ably performed in *one* process. This implement is yet more complete, for after the manuring and seeding the land is over, it may readily be converted into an excellent horse-hoe by taking out the coulters and drilling apparatus, and substituting hoes into the same levers, which by the aid of the swing steerage, may be guided to a nicety between the rows of corn at whatever distances apart. This admirable drill is not too complicated for general use, and the manufacturers (Garrett and Son) undertake to instruct in a few hours any husbandman not only to use it, but to alter the arrangement so as to make it the same in effect as the common corn drill, the corn and manure drill, the turnip and manure drill, the single seed sowing engine, a perfect corn, manure, small and grass seed drill, or a horse-hoe.

The seed sowing engine, No. 45 A., is an admirably working machine, the invention of the manufacturers (Garrett and Son). It is so constructed that the small heavy seeds, such as clover, trefoil, and suckling, are delivered from caps, while the lighter grass seeds, such as rye grass, &c., are with the same operation brushed out of a separate apartment in the box, down the same conductors with the other seed. This easy and simple method, whereby the required quantities of each seed are nicely mixed and evenly sown all over the land, deserves particular attention, and is performed by merely turning a regulating screw at the end of the box for the rye grass, &c., and for clover, &c., by changing wheels on the end of the cup barrel, by these means the objection to mixing the clover and rye grass is remedied.

The horse-hoe, No. 37 A., is so improved in principle by these makers (Garrett and Son), that although but little used at present is now suited to all methods of drill cultivation, whether broad, stetch, or ridge ploughing, the axletree being moveable at both ends, so that the wheels may always be kept between the rows of plants, and as each hoe works by a separate lever, no part of the surface however uneven can escape: in order to accommodate this implement for the consolidated earth of the wheat crop, and also for the more loosened top of the spring corn's roots, &c., the weights at the end of the levers may be varied, and the keys set to prevent the hoes going beyond the proper depth, and what has hitherto been an insuperable objection to the general use of the horse-hoe is here completely over-ruled by the swing steerage, with which the hoes may be guided to the greatest nicety, doing every execution among the weeds, without a possibility of injuring the corn, if common caution be used. This implement is so constructed that the hoes may be altered to suit different widths from seven inches onward,.the inverted hoes are preferred when the distance between the rows is sufficient to admit them.

No. 37 B., a two, three, or four coulter lever drill for seeds and manure only, has a slip axletree to vary the drill for the different widths of stetches or ridges, and a swing steerage; the rows of seeds may be drilled from nine to thirty-six inches apart, and it is so constructed that turnip and mangel wurzel seed is taken up by the cups separately and deposited together down the conducting apparatus to prevent any unequal mixture of the seeds. This implement may all be converted into a horse-hoe same as drill No. 36 A. There were also four other admirably constructed drills by the same maker.

Messrs. Garrett's horse power portable thrashing machine has also undergone considerable improvement since last year, and is particularly worthy the attention of agriculturists for its accelerative powers, nicety of work, and saving of horse labour;

it will thrash clean any kind of corn with four horses, as much as sixty imperial bushels per hour, without injuring the kernels; and by merely substituting another concave which is provided, it will, with only one or two horses, effectually draw clover, suckling, or any other small seeds. It is so portable that two men may set it down or take it up in half an hour, and two horses will remove it easily from place to place upon one pair of travelling wheels.

R. G. and Son also exhibited a newly-constructed thrashing apparatus, to be worked with the same horse power machinery as the above, having an enclosed drum and a peculiarly formed concave, so as to thrash wheat without either *bending* or *injuring* the straw in the slightest degree; and in those neighbourhoods where straw is required in quantities for thatching or for sale, this is a very important improvement, although the quantity of work done in a given time does not exceed half that of machine No. 49.

Thrashing Machine, No. 49, Four-horse power.

Also a Three-horse Power Thrashing Machine, upon the same principle as the above.

Improved Drill for General Purposes. 36.

No. 32, a Ten-coulter Corn, Seed, and Manure Drill, with five small coulters and apparatus to convey turnips or mangel wurzel seed behind and above the manure coulters.

Turnip and Manuring Drill. 37 B.

A 2, 3, or 4-coulter seed and manure drill, with a slip axletree, to vary the drill for different widths of ridges, from 24 to 36 inches, and a swing steerage, so that the man following the drill may guide the coulters on the tops of the ridges, and with four coulters on broad or stetch work, the rows of seed may be deposited as near as 12 inches to each other. This is so constructed that turnip and mangel wurzel seed are taken up by the cups separately, and deposited together down the conducting apparatus to prevent any unequal mixture of the seeds. This implement may also be converted into a Horse Hoe, by removing the coulters and drilling apparatus, and substituting hoes into the same levers.

MESSRS. J. R. AND A. RANSOME, OF IPSWICH:—

No. 1, Suffolk Swing Plough, with the improved coulter and fastening.—The difficulty usually attendant on setting the coulter with wedges is by this plan completely obviated. The coulter may be either raised or lowered, set *to* land or *from* land, placed more or less slanting, or in any other direction, by a very simple contrivance, as shown on the plough.

No. 2, Suffolk Swing Plough.—This is a variety of the above, but with the common coulter, and so fitted as to be adapted for strong clay soils. This plough was tested with many others at the Hintlesham Ploughing Meeting, and found to be of lighter draught than any other.

No. 3, Norfolk Wheel Plough.—This plough is used on the light lands of Norfolk.

No. 4, Essex Swing Plough.—This plough, with variations of the mould-board, is the sort used in Essex. The one now exhibited has the mould-board constructed upon a principle designed by Lord Western some years since, which has been known as Western's mould-board.

No. 5, Bedfordshire Wheel Plough.—This plough is used in Bedfordshire very generally, and is a light and effective implement.

No. 6, Bedfordshire Wheel Plough.—The same as the last with improved coulter, fastening, and lever to land wheel, by which the depth of the furrow may be regulated while the plough is working.

No. 7, Cambridgeshire Wheel Plough.—This is a light plough, and was originally made as a one-horse plough, but has been adapted by a deep mould-board to all light lands.

No. 8, Cambridgeshire Swing Plough.—The same as last, except being fitted as a swing plough, with mould-board constructed by the Rev. W. L. Rham, rector of Winkfield, Berks.

No. 9, Rutland Plough.—Made under the direction of R. W. Baker, Esq., Cottesmore. A light plough of almost universal adaptation.

No. 10, Northamptonshire Plough.—A light plough with wheels, made expressly for Northamptonshire.

No. 11, Northamptonshire Plough.—A light plough, in general use in many parts of Northamptonshire, as a swing plough, fitted with a skim coulter.

No. 12, Oxfordshire Plough.—Similar to the Cambridgeshire plough described at No. 7, but altered at the suggestion of P. Pusey, Esq. It is rather higher in the throat, and is fitted with but one wheel.

No. 13, Berkshire Plough.—A very light plough, calculated for lands where great depth of furrow is not required. The mould-board is in two parts. This is a slight variation of the ploughs originally made by J. R. and A. R. for Southampton and its neighbourhood.

No. 14, Herts and Hants Wheel Plough.—This plough is calculated for strong lands, and is much used in these counties.

No. 15, Herts and Hants Plough.—The same in principle as the last, with the exception of the different fitting of the wheel.

No. 16, Lincolnshire Swing Plough.—The iron-work only of this plough is generally furnished by J. R. and A. R., as the ploughs are readily fitted by the local plough-makers. It is a remarkably light plough and much approved.

No. 17, Yorkshire Swing Plough.—Very similar to the above. A description of plough much used in Yorkshire.

No. 18, Fen Swing Plough.—Made for the fens of Cambridgeshire and Lincolnshire. The wearing parts are formed of steel, to prevent the adhesion of the soil.

No. 19, Huntingdonshire Wheel Plough.—A very useful implement, admitting adaptation to almost every description of soil.

No. 20, Surrey Swing Plough.—A very strong plough. Calculated for deep ploughing on strong clay soils.

No. 21, Kent Turnwrest.—An improved plough, on the principle of the Kent Turnwrest; made under the direction of William Smart, Rainham. The ploughman can, without difficulty, shift the rests and coulter without leaving his place at the handles of the plough; and every facility is afforded for effecting any alteration in the pitch of the plough with perfect accuracy.

No. 22, Belton Turnwrest Plough.—This plough, as well as the one above-mentioned, is intended to accomplish the object of ploughing right and left alternately, in order to lay the furrows all in one direction. In this plough the process is accomplished by having the body of the plough so formed as to represent two ploughs attached heel to heel; and the handles and beam, being attached by a pivot to the centre, can be reversed at each turning without difficulty.

No. 23, Scotch Plough.—The form of this well-known implement is preserved, but the adaptation of Ransomes' irons removes the difficulty in exchanging any of the wearing parts when necessary.

No. 24, Scotch Plough.—Similar to 23, but with the addition of wheels at the head of the plough. These can be removed or retained at pleasure, according to the nature of the work to be performed.

No. 25, Lincolnshire Double Furrow Plough.—This is made after the plan of one originally invented by Lord Somerville, but has the advantage of modern construction.

No. 26, Double Furrow Plough. Made for P. Pusey, Esq., similar to the above, but with mould-boards, in form like No. 12, and made of steel much lighter than the former.

Universal Ridge Plough. This is adapted to the several purposes of ridge culture, and our plough admits of all the variations exhibited as under, No. 27, 28, 29, 30. The silver medal of the Royal Agricultural Society of England was awarded to John Clarke, of Long Sutton, under whose direction this plough was made, by J. R. and A. R.

No. 27, Universal Plough, as a Double Tom, or Ridge Plough. No. 28, Do. do., as a Moulding Plough. No. 29, Do. do., as a Horse Hoe, or Cleaning Plough. No. 30, Do. do., as a Skeleton, or Broadshare Plough.

No. 31, Rackheath Subsoil Plough. Invented by Sir Edward Stracey, with improvements, by J. R. and A.R.

No. 32, Rackheath Subsoil Plough. With apparatus for sub-turf ploughing.

No. 33, Rackheath Subsoil Plough. The same in principle as No. 31, but much stronger.

No. 34, Bean Drill Plough. No. 35, Jersey Potato Plough. Invented by Boutillier, for which he was awarded ten sovereigns by the Royal Agricultural Society of England.

No. 36, Irish Plough. This plough was made under the direction of John Houghton, Esq., of Sunning Hill, Berks, for the purpose of deep ploughing, and he has used it very successfully in Ireland.

No. 37, Biddell's Scarifier. This is a very powerful implement for the purpose of cultivating land under a variety of circumstances, and bringing it into a proper state of tilth much more effectually, and at less expense, than can be done by the means generally employed for that purpose.

No. 38, Biddell's Extirpating Harrow.

This is particularly adapted for cleaning pea and bean stubbles, breaking up such land as is too hard for the heaviest common harrows, and for bringing winter fallows into a fine state for receiving spring corn; it is also eminently calculated in working summer-lands, for raising short grass to the surface, as well as for general purposes of fine tillage, and cleaning land. The tines of this implement in their work are only four inches apart, and as steel hoes of that breadth are made to fit the tines, close shallow hoeing may be well performed. The weight of this implement, at first sight, may appear an objection, but which, on trial, will be found to be advantageous. The weight is borne upon wheels upwards of four feet high, and consquently there is not that labour to the horses in drawing it that would otherwise be the case.

No. 39, Chaff Engine—(small size). This engine cuts to one length only: it is suited for gentlemen's stables. One man will cut with it about 16 bushels per hour.

No. 40, Chaff Engine—(large size). This will cut to the different lengths of ¼-inch, ½-inch, and ¾-inch. It requires two men to feed and work it properly, and will cut at the rate of 18 to 20 bushels per hour ¼-inch; 40 to 50 do. do., ½-inch; 50 to 60 do. do., ¾-inch. It is frequently attached to horse power.

No. 41, Double-motion Hand-power. To increase the speed of the above engine.

No. 42, Gardener's Patent Turnip Cutter. This is a remarkably effective machine for cutting turnips, at a rapid rate, into small slices, for sheep.

No. 43, Oil-cake Breaker. This machine is made very strong, to stand the resistance of breaking the cake, and may be used by hand, or attached to horse-power.

No. 44, Beart's Patent Tile Machine. This simple invention reduces the cost of making tiles for draining very considerably; and by it from 15 to 18,000 may be made per week.

No. 45, Hand Thrashing Machine. This is a simple and at the same time very effective machine. With four men it will thrash four sacks of wheat per hour.

No. 46, Portable Four-horse Thrashing Machine.

This machine is in a form familiar to agriculturists, and little need be said in explanation of its construction. J. R. and A. Ransome have paid great attention to the introduction of good workmanship, so as to combine durability with effective performance: to this end the large iron horse-wheel is turned true in a lathe at that part upon which the friction-wheel runs; and the requisite speed of the drum is obtained by three pairs of wheels instead of two only, as was formerly the case, but which was found to involve great loss of power and wear of the machinery. Considerable saving of power is also made by the use of a new form of tooth in the wheels which combines increased strength with decreased friction, and consequently greater durability: for which improvement the public are indebted to the mathematical investigations of two Cambridge Professors—Airy and Willis. It is difficult to give correct ideas of the quantity of work that any agricultural machine will perform, from the varying circumstances attending the operation, and so much depending upon the skill of workmen, but they consider that the rate of five quarters per hour may be taken as a fair estimate of a good crop, with a person to feed the machine accustomed to the use of it. With an unusually good yielding crop, six quarters per hour have repeatedly been thrashed out, and this was done at Cambridge last year, at the time of the public trial there—the result of an hour's work being 61 bushels and three pecks. The whole of this machine is carried on two wheels, and is particularly adapted to letting for hire, as it is a moderate load for two horses, and easily put down to work and removed afterwards.

No. 47, Portable Thrashing Machine, with Steam-power. The thrashing part of this machine is similar in its construction to the one above mentioned; but it is worked by a portable steam engine instead of by horses.

Mr. Lance, of Blackwater, near Bagshot, the following :—

Model of a Machine for depositing Lance and Co.'s granulated Humus and Carbon Manure at the same time with Turnip Seed, or by shifting the box, any kind of grain. The same instrument will draw the drill at the same time, if required, or a hoe may be fixed, the boxes removed, when it will pass between any narrow cropping—when the drill is worked same time with seed and manure, a lad is required to pull the machine, otherwise it is worked by one youth only.

A Collection of Agricultural Soils, with specimens of Rocks and Strata, as the origin of their formation; arranged according to their Geological position, from Kent to Cornwall. A Collection of extraneous Manures, arranged according to their Chemical and Mineral constitution. Specimens of the Effects of the Manures on Sterile Soils.

Mr. W. Groundsell, of Louth, the following :—

A Thrashing Machine, 4-horse power, upon a new principle. It has been worked and has given the greatest satisfaction. Also a machine for taking the horns from barley, to work with one or two men, and will chop from 10 to 15 quarters per hour; also gives it a much brighter cast than treading and chopping upon the floor, which will effect it 1s. per quarter, especially in damp weather.

Mr. John Howard, of Bedford.

1, One Patent Iron Plough for general purposes, and one Patent Light Plough for one horse. The improvements in the above ploughs are these—the principle or mode of draft being a chain under the beam connected with the frame or body of the plough, thus having or getting the power direct from the point of resistance. Also an improved method of fastening the share by a screw rod, by which the share is fastened more securely than by any other mode; and a variety of improvements too numerous to mention.

2, Four Sets of Patent Wrought Iron Harrows, of different sizes. One set may be called *a Scarifier*. The improvements in these implements are, that the tines or teeth are made so that each will cut a separate furrow, and are kept in their tract or furrow by a central draught from the swelltree, so that if the horses draw ever so irregularly, they cannot be thrown out of their course.

3, Two Horse Hoes. One of the above is intended for turnips sown upon Northumberland ridges; the other is for three rows of turnips, beans, &c., sown upon the flat; also can be used for one row upon the Northumberland system.

Mr. H. H. Wright, of Hatton Grange, near Shiffnal.

A double Furrow Plough. This description of plough is in general use in the county of Shropshire.

Mr. John Hamilton, of Torthorwald, Dumfries-shire.

A Cheese Press, a Model Draining Plough, and the following:—1, A common Seed Plough. 2, A double mould-board Plough. 3, A Ribbing One-horse Plough. 4, A Subsoil Plough. 5, A One-furrow Plough, which lays the soil all one way. 6, A Grub Harrow. 7, Do. for Drills. 8, A Drill Harrow. 9, A double Turnip Drill. 10, A Cheese Press, with double power.—These articles are all of iron.

Messrs. Sanders and Williams, of Bedford.

7 Ploughs, 1 Scuffler, Harrows, Turnip Cutter.

The seven ploughs are two-wheeled, with an improvement in the coulter, made of wrought iron, with cast bodies. Some are wood beams and handles, and cast iron bodies. The sets of harrows are all of wrought iron, made upon an improved principle and light draught for two horses. The scuffler is also made of wrought iron, with two sets of tines; can be worked with ease with two horses on light soil and three on heavy soil. The turnip cutter is in a wood frame, with hopper, and moved by a pair of wheels in front similar to a wheelbarrow, and will cut about one bushel a minute.

Mr. James Wilkie, of Uddington, near Glasgow.

1, An Iron Single-horse Swing Plough. 2, A common Two-horse Ditto. 3, A Turnwrest Plough. The plough intended for exhibition has wrought iron mouldboards and self acting bridle.—4, A Two-horse Friction Wheel Plough. 5, A Subsoil Plough, with wheel on the beam to regulate the depth.—6, An Expanding Horse Hoe, with Drill Harrow attached, and wheel on beam. 7, A Brake, Scarifier or Cultivator, of Iron. Broad shares or chisel points may be employed at pleasure.

Description of the Brake.—It consists—First, of a frame having the form of an isoceles triangle; the sides of which are knee'd and curved in a peculiar manner, so as to admit of the greatest facility in fastening the tines, and at the same time to preserve a position parallel to the line of progression. (These tines are bended levers, having the upper part curved so as to introduce the principle of tension, the under part being formed nearly on the principle of the solid of least resistance, consequently requiring only the minimum of moving power. By the introduction of these two principles, strength and efficiency are obtained, with the least waste of materials or power.) Another advantage of this form of the tines is that the couch-root weeds, or other obstructions encountered, rise to the top, and, meeting with no interruption, fall off spontaneously, without clogging the motion of the implement in its passage through the soil. Secondly,—The above triangular frame, with the tines attached is connected at each of its angles to a three-wheeled carriage, by means of parallel joints; a prolongation of the one at the vertex of the triangles, forms the lever, by means of which the implement is regulated so as to work from one to eight or nine inches deep. This is done instantaneously, and with mathematical exactness, each tine penetrating an equal depth into the soil. In turning at the land's end, the tines can be thrown out of the ground entirely, the machine being raised upon its carriage, turns on the swivel wheel in front in the least possible room, with little exertion of the horses. By placing a pin in one of the holes of the quadrantal above the lever behind, or above the beam in front, the implement may be left to itself, the hand of the guide only being necessary at turning. This implement may likewise be employed with advantage as a grubber, scarifier, or swardcutter. As a drill machine it may, perhaps, be used with more advantage, from its extreme accuracy of adjustment, than in any other of its applications; and if sufficient power were applied, it might be constructed so as to take a number of furrows at once, and with much less loss of power than when the single plough alone is employed. The plough can have a wheel placed in such a position as to act as a substitute for the landside and sole, which are partially removed. By this means the friction, and in consequence the draught is greatly diminished, the steady going of the plough increased, and the expense of keeping in repair considerably reduced. The wheel is placed in a diagonal position, reclining from the perpendicular at an angle of 30 or 40 degrees. The proper position of the wheel may easily be deduced from this consideration, that the furrow is raised and turned over by the action of two inclined planes, the one vertical, the other horizontal (by which the plough is firmly pressed into the angle cut by the sock and coulter), the wheel being substituted for the landside and sole ought, therefore, to be placed precisely in the diagonal of these two forces. The circumference of the wheel, consequently, has two faces at right angles to each other, and as this angle will last a very long time in its original accuracy, without becoming round or obtuse, it presents a most important advantage over the sole and landside of the common plough, which from the moment they enter the ground, are gradually becoming convex, and in consequence the plough becomes unsteady in its motion, and requires the incessant exertions of the blacksmith in tempering the irons, by dipping the sock point, and turning it to the land. In the wheel plough, when cast-iron socks are used, the blacksmith's assistance is rarely necessary, the ploughman replacing the sock himself when the old one is worn out. By this means a great saving of time, expense, and vexation is effected; the work is better performed, and the draught is reduced in a ratio of upwards of thirty per cent.

Mr. John West, of Lundie, near Dundee, the following:—

Common Two-horse Plough. Double Drill Plough, for two horses. Subsoil Plough. Intended to perform the double operation of laying over the surface and subsoiling at the same time, without bringing any of the subsoil to the surface. Drawn by four horses. Grubber, or Scarifier. Turnip and Manure Drill. Corn and Grass-Seed Sowing Machine. By this improved machine one man and one horse may sow from twelve to fifteen acres per day, at a very moderate computation.

Mr. Richard Hornsbey, of Spittlegate, Grantham, Lincolnshire, the following:—

1, Drop Drill, for Flat Ground, for Depositing Turnip Seed with Bones or any other Pulverized Manures—fitted also as a Corn, Seed, and Manure Drill; also as a Corn and Seed Drill. 2, A Corn, Seed, and Manure Drill; fitted also as a Corn and Seed Drill. 3, A Corn and Seed Drill. 4, A Two Row Drop Ridge Drill, for Turnip Seed and Bones, and other Manures—varying distances to suit the ridges; also as a Ridge Drill in the common way; and for Corn, Seed, and Manure on the Flat Ground. 5, Two Row Ridge Drill, upon Rollers, varying Distances to suit the Ridges.

Messrs. Drummond and Sons, of Stirling, the following:—

Barrowman's Iron Swing Plough; New Turnwrest ditto ditto; Smith's Subsoil ditto; Ditto ditto, with shifting Mould-board; Deep Furrow or Trench Plough; M'Ewan's Drain ditto; Double Mould-board Green Crop ditto; One-horse Green Crop Grubber; Ditto ditto ditto, with double Mould-boards; Kirkwood's Four-horse ditto; Expanding One-horse Drill Hoe, with Harrow attached; Pair Saddle Harrows, for Potato Drills; Farm Roller; Set Equalizing Draught Bars for four Horses; Bone-dust and Turnip-sowing Machine; Stubble Hay or Couch Grass Rake, one horse; Drummond's Improved Reaping Scythe; Implements for opening Tile Drains; ditto ditto, Small Stone ditto; ditto ditto Wedge ditto; The Models or Sections of Drains; Drain Harp Shovel; Implement for Lifting Turnips in frosty weather; Machine for Twisting Three Straw Ropes at once; Zinc Milk Coolers; Vessel for making Clotted Cream; Improved Oval Churn; Ayrshire Cheese Press; Road-scraping Machine; Model of Corn Stack; Cast-iron Stack Pillars; Gart Steelyard or Weighing Machine; Poultry Feeder; Pheasant Feeder; Barley Hummeler; Ring for Leading Refractory Cattle, &c.; Dynamometre, or Instrument for ascertaining the Resistance of Ploughs; A Smith's Reaping Machine; Smith's Subsoil Plough; Potato-lifting Implement; Turnip-thinning Machine; Chain, for Covering Grass Seeds; with a few other Miscellaneous Small Articles.

M. J. Winrow, of Nottingham,—1, A small Machine for Destroying the Turnip Fly, by steaming between the rows; may also be used for steaming food for cattle. 2, An improved Turnip Cutter fixed underneath a cart, to be worked either by hand or by horse power; to cut the Turnips and spread them on the land at the same time. It will cut either for beast or sheep.

Mr. J. Gardener, of Banbury,—a Turnip Cutter.

Mr. B. Edington, of 2, Duke-street, Southwark,—A Rick Cloth, Tent, Waggon Cloth, Horse Cloths, Sacks, Flags, Ropes, Sheep Netting.

Mr. T. Buxton, near Malton, in the North Riding,—A four-horse Threshing Machine; a seven-rowed Turnip, Corn, and Manure Drill; a two-rowed Land Presser, with Corn and Manure Drill attached; a five-knived Straw Cutter, to work by horse power.

Messrs Perry, Barrett, and Exall, of Reading, Berks,—A Double-Furrow Plough; eight single-wheeled Ploughs, of their own invention and manufacture; a Patent Wire Worm Roller; a Gorse Crushing Machine, &c.

Messrs. Cottam and Hallen, of Winsley-street, Middlesex,—Two large Ploughs; a Graves Cutter; a large Draining Plough; a Lever; and several smaller Machines, Dynomomotres.

Mr. E. Edwards, of Menai Bridge,—Horse-power Machinery. Its merit consists in its doing its work effectually with a small power, the simplicity of its construction, and mode of working.

Mr. W. Crosskill, of Beverley, Yorkshire,—1, A Four-horse Thrashing Machine; the peculiarities are simplicity, and consequently low price. 2, A Turnip Drill for Seed, of simple management. 3, A Clod Crusher Roller, for Rolling Wheat on Light Soils, and is useful for stopping the wire worm. 4, A Liquid Manure Cart, with copper pump and flexible hose attached to cart, and also fitted with brass valve and lever.

Mr. J. Brewster, of Brewood, Staffordshire,—a Turnip Cutter.

Mr. T. Bigg, 15 Crawford-street, Portman-square, London,—Dipping Apparatus, of his own invention.

The Rev. W. L. Rham, A.M., of Winkfield, Berks,—Implement for Preparing the Land and Depositing the Seed.

Mr. M. Lea, of Liverpool,—1, A Square Churn, with a Fly Wheel, or Friction Rollers. 2, An Oval Churn, worked by Cogs on Spindles in an upright position, causing two fans to revolve towards each other.

Messrs. White and Leith, of Worksop, Nottinghamshire,—1, A Drill, for general purposes, eight rows of Corn, Turnips, Seeds, and Tillage. 2, A Drill, to sow one row of Turnips, and Tillage on Ridges. 3, A Cake Crusher, for Cattle, Sheep, &c. 4, A Chaff Cutter. 5, A Patching Drill, used when Turnips come up partially. 6, A Scarifier, or Moss Harrow, to be used on old Grass Land. 7, A Machine for Cutting Hay or Straw, and Turnips, and for Bruising and Mixing the same together with a sort of Pulp, for Cattle, &c., to be Worked by Man's Power.

Mr. R. Beart, of Godmanchester, Hunts.,—a Patent Machine for making Drain Tiles.

Mr. R. Greaves, of Stratford-upon-Avon, — Barn and Warehouse Paving.

Mr. H. Hannam, of Burcott, Oxon,—A Single Horse Skeleton Harvest Cart; intended by its lowness, lightness, and capaciousness, to carry the largest load that one horse is capable, in any situation, of drawing.

The Right Hon. Earl Ducie, of Woodchester Park, Gloucestershire,—A Threshing Machine, driven by two men. The principle of this machine is to scutch out the corn; and it is effected by presenting the corn to the drum as a tangent to a circle, not at right or any other angle to the axis of the drum. The principle is the construction of Mr. John Morton, Chester Hill. Two men can scutch out four bushels and a half of barley in an hour with this machine.

Mr. Wedlake, of Hornchurch, Essex, the following :—

Dibbling Machine, for the purpose of Dibbling Wheat, other Grain, or Seed, instead of Drilling it. It is considered that such an implement is much wanted. It will possess many advantages over the drill. It forms the hole and drops the grain in at the same time. It will take much less seed than is used in drilling. The roots get a firmer hold of the earth, which is very desirable, particularly on light soils.

Hay-making Machine, for the purpose of Shaking out the Grass. This machine has an advantage over all other machines of the kind, it being made in two cylinders and upon a different principle from any other that has ever been introduced to the public, can be worked easily by one horse, and the substantial and simple manner in which it is constructed renders it not in the least liable to get out of order.

Two Winnowing Machines, for the purpose of Winnowing or Cleaning Corn. Two Chaff Machines, for the purpose of Cutting Hay or Straw into Chaff. Oil Cake Machine, for the purpose of Breaking of Oil Cake. Turnip Drill, with Rollers attached, for Drilling Turnips in Ridges. Hay or Stubble Rake, for gathering or collecting the Hay together, after the Haymaking Machine has scattered it about. Scarifier, with Mould Plough attached, to clean the Land beween the rows of Peas, Potatoes, &c.

Mr. J. Rawes, of Thornley Colliery, Durham,—a Model of a Furrow Draining Plough, invented by Mr. J. Rawes, and manufactured by Mr. J. Furguison, of Thornley Colliery.

Mr. J. Cartmell, of Liverpool, — 1, A Mill for Crushing Oats and Beans. 2, Two Machines for Cutting Hay and Straw.—3, A Turnip Cutter, for Sheep and Cattle, (double.)

Mr. W. Blurten, of Field Hall; near Uttoxeter, Staffordshire,—1, A Cheese Turner. 2, A Double-acting Portable Screw Flood Gate Lever. 3, A Curd Slicer. 4, An Implement for the destruction of the Coltsfoot.

Mr. T. Taylor, of Banbuoy, Oxon,—Patent Saddles.

NEW IMPLEMENTS.

Mr. P. Bradshaw, of Frimley Hill, Surrey, a New Implement, as below. The merits of this implement consist in dibbling, drilling, and dropping seeds, manure, or other similar substances, at equal distances, so that the plants may grow at regular intervals; thereby affording complete facilities for hoeing round them, inserting manure where it is most wanted, and effecting a great saving of manual labour, time, seed, and manure. The dropping process may be applied to, probably, all descriptions of drilling machines.

Messrs. White and Leith, —1, A New Implement, for Scarifying old Grass Land [illegible] Parks, and commonly called a Moss Harrow. It is found of great utility to to be used before and after dressing with manures, &c., it is very simple in its construction, and durable, can be worked by one horse, and if to go only one way in the field, will do from three to four acres; if done the latter, there will not be one inch that is not scarified. It is at a small cost, invented by the above. 2, A New Implement or Machine for Cutting Hay and Straw, and Turnips, Bruising and Mixing them together at the same time as food or Cattle, &c. To be worked by man's power. Invented by the above.

Messrs. Perry, Barrett, and Exall, of Reading, a Jackson's Patent Wire Worm Roller, invented by Mr. A Jackson, of Orpington, in Kent. Its merits consist in preparing the field for the safe reception of the seed, and by the hardness of the furrow it makes in the ground, renders the intrusion of the wire-worm much more difficult, and next to impossible.

Mr. W. Torr, jun., of Riley, near Caistor, Lincolnshire,—a Drill for Sowing or Drilling clover and grass seeds in an improved manner.

Mr. C. Phillips, of Chipping Norton, Oxon,—a New Implement. The merits are its cutting, by human power, a much larger quantity of wheat, rye, oats, or barley, than can be cut by any present means, leaving scarcely any or no gleanings, cutting the straw as near the ground as the clearness of the land will admit of, and depositing the corn either in sheaf or swarth.

Mr. J. C. Grant, of Stamford, Lincolnshire, —A new Implement, called a Horse Drag. The merits consist in simplicity of construction and facility of operation.

Messrs. Edmunds and Huckvale, of Banbury, and Over Norton, Oxon,—A new Implement, namely, a Broadcast Drilling Machine, for Turnips or Grass Seeds. The merits of this implement consist in the plan for equally and simultaneously regulating the quantity of seed, and that it will sow broad-cast or drill turnip and grass seeds in rows at any required distance.

The Rev. W. L. Rham, A.M., of Winkfield, Berks, —A new Implement. The merits consist in producing a better tilth and a more even surface of the land, depositing the seed at a regular depth and at equal distances, and making the drills so parallel as to allow the intervals to be hoed by the same implement, which can be steered with the greatest accuracy.

Mr. G. Townsend, of Sapcote Fields, Leicestershire, —1, A new Implement. The merits consist in its expeditious and effective manner of cutting and spreading (when cut) turnips for cattle upon turf. 2, Also a ditto, ditto.

Messrs. W. Drummond and Sons, of Stirling,—a new Implement, viz., a Plough. Whose merits consist in being adapted to remove the furrow, and to perform the subsoil ploughing alternately by the same ploughman and team of horses.

Mr. T. Wedlake, of Hornchurch, Essex, —a Haymaking Machine of his own invention.

Messrs. W. Drummond and Sons, Stirling, —a New Implement, viz., a Reaping Scythe. The merits consist in its being easy to work, adapted to cut either standing or lodged grain speedily, and to lay it regularly.

Mr. J. Hamilton, of Torthorswald, Dumfries,—a Plough. The merits consist in laying the furrow all to one side. Improved from the Draught, by Mr. J. Hamilton.

MR. THOMAS GLOVER, OF THRUSSINGTON.

The Turf and Stubble Paring Plough, invented by Thomas Glover, of Thrussington, in the county of Leicester, is a New Implement, and possesses the following qualifications:—

The advantages of this implement consist in paring the turf off old grass land, clover leys of any growth, or stubbles, with greater precision, expedition, and economy, than any other machine now in use. The turf being cut of a regular width and thickness, and the manner in which it is laid when cut is sooner dried and fit for burning, than by the old system of floating with the breast-spade. The expedition with which the work can be performed is important, as advantage may be thereby taken of favourable season and weather, and the difference of cost is a great consideration. The turf is cut of the uniform width of about fourteen inches, and the thickness may be varied at the will of the holder, from half an inch to two inches, as may be required, and laid up in a curl with the surface inwards. A man, with three horses and a driver, will plough two acres in 8 or 9 hours, while, by the breast-spade, a strong man working hard would not complete more than three roods, or one acre in six days, at a cost of from 16s. to 20s. per acre, according to the nature of the ground. This plough is calculated to pare clover leys, or stubbles, as well as old turf, and will do an equal quantity in the same time. It is not difficult to work, and any person with a little practice wil be able to conduct it on any land of tolerably even surface.

Mr. R. Parkinson, of Knowsley,—a New Implement.

Mr. H. Hannam, of Burcott, Oxon,—Skeleton Harvest Cart, for carrying the Largest Load that One Horse is capable of carrying.

GORSE CUTTING MACHINES.

Mr. J. Winrow, of Nottingham,—a Gorse Cutter. Much smaller than those in general use, cutting the gorse in a superior manner, or, if required, will cut hay or straw.

Mr. E. Edwards, of Menai Bridge, Anglesey,—Gorse Cutting and Crushing Machine. Is adapted to three separate purposes, namely, gorse cutting, gorse crushing, and chaff cutting.—For sale.

Messrs. White and Leith, of Worksop,—a Gorse Crushing Machine. The merits consist in reducing gorse to such a soft pulp as to leave nothing offensive to the palate of either cattle, horse, or sheep. It is on a very simple but durable principle, very effective and expeditious, of small expense, and can be worked by one man, and a boy to feed it.—Invented by Messrs. White and Leith.

Messrs. Perry, Barrett, and Exall, of Reading,—a Gorse Crushing Machine, which first cuts the Gorse as a Chaff-engine does Straw, and by the Action of a pair of Cylinders, into which it then falls, and which rotate at different Speeds, effectually crushes and renders it fit for the Mastication of Sheep and Beasts.

CHAFF CUTTERS, CAKE CRUSHERS, AND MACHINES FOR CLEANING SEEDS.

Messrs. R. Garrett and Son, of Leiston Works, Saxmundham,—1, A Hay Making Machine, for Strewing Grass with a Movable and Revolving Barrel.—2, A Crusher for Breaking Corn, and also Cake, either Fine for Manure, or Coarse for Cattle.—3, A Corn Dressing Machine.—5, Three Varieties of Chaff Cutting Engines for Hand Work, to cut different lengths of Chaff for Feeding Cattle.

Mr. T. Hunter, Ulcesley near Barton, Lincolnshire,—a Cake Crusher. Manufactured by himself.

Mr. J. Brewster, of Brewood, Staffordshire, — Oil Cake Crusher. Manufactured by himself.

Mr. Thomas Wedlake, of Hornchurch, Essex,—1, Chaff Cutter.—2, Oil Cake Crusher.—3, Winnowing Machine. Invented by the above.

Messrs. White and Leith, of Worksop,—1, A Chaff Cutter, with an Endless Bottom.—So that one man can work it, and can cut hay or straw from ¼-inch to 1½-inch as wanted, by simply turning a screw which regulates the length, and can be done without stopping the machine. The straw is quite still at the time the knives are cutting, and pressed into a small firmbody. It is durable and expeditious. Improved by Messrs. White and Leith.—2, Also a Cake Crusher, for cattle, sheep, &c. It has two sets of rollers in the same shafts when breaking for cattle—only one set of cutters are in work. By turning the two regulating screws, the other cutters are put into action, and break it sufficiently small for sheep, horses, &c. Invented by the above.

Mr. W. Ground, Whittlesey, Cambridgeshire,—a Machine for Cleaning Corn and Seeds. It is in part the invention of Mr. Cooch, of Harlestone, with improvements by the above. The principles are, a riddle to work close under the rollers, to take the straw, ears, and rough chaff before the wind has any power over it. Manufactured by the above. Messrs. Summers and Sworder, of Bishop's Storford, Herts, Patent Winnowing Machines and Corn Blowers. Invented by Mr. Thomas Salter, of Great Hallingbury, Essex. Manufactured by Mr. Thomas Wedlake.

Mr. B. Dean, of Birmingham,—a Corn Crusher, and Bean Splitter; of his own invention and manufacture.

Mr. J. Cooch, of Harlestone, Northamptonshire,—a Cleaning Machine. Invented by Mr. John Cooch, and manufactured by Mr. Joseph Cooch.

The Rt. Hon. Earl Ducie, of Woodchester Park,—Chaff Cutter. The peculiarities are that the blades or knives are curled spirally, or in the form of a screw upon a cylinder, and produce a continuous stream of chaff.

Mr. W. Groundsell, of South Lincolnshire,—1, A Corn-Dressing Machine of his own Invention and Manufacture.—2, An implement for Grinding and Crushing Corn of every sort, to be worked by one man, and to grind 16 pecks per hour—it is also very simple.—3, An Implement to break Oil or Rape Cake for beasts or sheep, or for drilling. Worked by one man.

PLOUGHS, TO BE WORKED IN THE FIELD.

Mr. Pusey, of Pusey, Berks,—Subsoil Plough, of his own Invention, for four horses. Single-horse Plough (marked F. S.) Manufactured by Messrs. Ransome, of Ipswich.

A One-horse Plough. Invented by Messrs. Barnard and Brooks, of Pusey and Hatford. Manufactured by Mr. Hart, of Reading.

A Plough (marked N. L.) Manufactured by Messrs. Ransome, of Ipswich.

A Plough. Invented by Messrs. Barnard and Brooks, of Pusey and Hatford. Manufactured by Mr. Hart, of Wantage.

A Double Plough. Manufactured by Messrs. Ransome, of Ipswich.

A Double Plough, for two horses. Manufactured by Messrs. Perry and Exall, of Reading

Messrs. R. Garrett and Sons, of Leiston Works, Saxmundham,—a Plough, for General Purposes, with a Drill attached. Partly their own Invention, and it is of their own Manufacturing.

Mr. J. Howard, of Bedford,—Patent Wheel Plough. Invented by Mr. W. Armstrong (the Patentee), Hawnes, Beds. Manufactured by Mr. J. Howard.

Messrs. W. Drummond and Sons, of Stirling,—Subsoil Plough. Invented by Mr. J. Smith, of Deanston. Manufactured by Mr. W. Wilson, of Larbert, Stirling.

Mr. Muscott, of Westenbury, Hereford,—Subsoil Plough, of his own Invention. Manufactured by Messrs. J. and H. Meredith, of Kingston, Hereford.

Mr. W. Ellison, of Sizergh Castle, near Kendal, Westmorland,—a Plough for general purposes. Manufactured by Mr. F. Harling, of Sedgwick, near Kendal.

Mr. T. Huckvale, of Over Norton, near Chipping Norton, Oxon,—one-horse Plough, invented and manufactured by himself.—Its novelty consists in its lightness and its weight bearing principally on the wheels, rendering the draught much easier.

Mr. P. Love, of Naseby Manor Farm, Northamptonshire,—a Plough, manufactured by Mr. G. Smith, of Eddingston.

Mr. F. Harling, of Sedgwick, near Kendal, Westmorland,—an Improvement on Wilkie's Plough. Manufactured by Mr. F. Harling.

Mr. W. Sherrard, of Kilboggot, Dublin,—Kippy's Improved Plough. Manufactured by Mr. J. Lestrange, of Smithfield, Dublin.

Mr. H. Turner, of Killingworth, White House, near Newcastle,—Common Swing Plough.

Messrs. Perry, Barrett, and Exall, of Reading, Berks.,—a Single Wheel Plough. Invented and manufactured by the above.

Mr. R. W. Baker, of Cottesmore, Rutland,—a Rutlandshire Plough. This plough is of a simple yet strong construction; it is light in appearance, easy of draught, and economical in use. Each wearing part is so contrived, that it may be removed and replaced by the ploughman without sending the plough off the field. The shares are case-hardened on the under side to the temper of steel, which occasions their wearing to a thin cutting edge while at work. At the Cottesmore Annual Ploughing Meetings, this plough has, year after year, obtained the chief prizes, and is now in general use in the county of Rutland. Invented by Mr. Richard Baker, and manufactured by Messrs. I. R. & A. Ransome, of Ipswich.

Sir F. Lawley, Bart., Burton, Salop.,—a Subsoil Plough.

Mr. P. Love, Naseby, Northamptonshire,—a Moulding and Ridgeing Plough. Manufactured by Mr. J. Miller, smith, Wyneford by Glasgow.

Mr. T. Huckvale, of Over Norton, near Chipping Norton, Oxon. — The following. — Furrow Filling Plough, or Leveller.—This implement intended to fill the furrows before adopting the broad system of cultivation by the turnwrest, or where the field is intended for permanent pasture. It will fill the furrows more effectually and expeditiously, than it can be done by other means. Invented and manufactured by Mr. Thomas Huckvale. Turn-wrist Plough.—The novelty of this plough consists in its double share acting alternately as share and coulter. The spindle that turns it also adjusts the mould-board. The plough can be turned at land's end without stopping; will act as a common, a turn-wrest, and a trenching or ridge plough. Invented and manufactured by Mr. Thomas Huckvale.

Mr. J. Hamilton, of Totherwald, Dumfries,—1, a Subsoil; 2, a Double Furrow; 3, One-horse; and 4, a Common Seed Plough. Of his own Invention and Manufacture.

Mr. H. H. Wright, of Hatton Grange, near Shiffnal, Shropshire,—a Double Furrow Plough. Manufactured by Mr. J. Pointon, of Shiffnal.

Mr. E. D. Falkner, of Fairfield Hall, near Liverpool, Lancashire,—Pair of Horse Ploughs. Invented and Manufactured by Mr. E. Brayton, of Dykesfield, near Carlisle.

The merits of this Plough are considered to consist in the shortness of the beam, contrasted with the length of the stilts, and also in the length of the sole. It may be considered a compound of the old Scotch plough, by Lowder, and of the more modern one, by Wilkie: partaking of the former, in the insertion of the beam, and the form and depth of shear, and of the latter in the length of sole and curvature of the mould-board. It is considered that greater steadiness of motion, and power of control are attained by the ploughman, whilst the draught is decreased. It is also considered to turn with greater regularity, the slice thrown out from the furrow, and to assist the drainage by the evenness with which the substrata at the bottom of the furrow is pared. It is intended for general purposes, to be worked with a pair of horses abreast, but is also capable of being worked with four horses, in very heavy land, or by a pair yoked singly before each other for finishing work on wet land.

Mr. C. Hart, of Wantage, Berks.,—a Double-Furrow Plough; invented and manufactured by Mr. C. Hart. Also, a Charlbury Subsoil Plough, invented by Mr. Pusey; manufactured by Mr. C. Hart, of Wantage.

The Hon. Ed. Mostyn L. Mostyn, of Mostyn, Flintshire,—a Plough.

HORSE HOES, TO BE WORKED ON THE FIELD.

Messrs. R. Garrett and Son, of Leiston Works, Saxmundham, Suffolk—a Horse Hoe, of their own invention and manufacture.—(No. 37, A.) Much improved in principle by the manufacturers. The horse hoe, though but little used at present, is suited to all methods of drill cultivation, whether broad, stetch, or ridge work, the axletree being moveable at both ends, so that the wheels may always be kept between the rows of plants; and, as each hoe works by a separate lever, no part of the surface to be cut can escape, however uneven. In order to accommodate this implement for the consolidated earth of the wheat crop, and also for the more loosened top of spring corn, roots, &c., the weight at the end of the levers can be varied, and the keys set to prevent the hoes going beyond the proper depth; and what has hitherto been an insuperable objection to the general use of the horse hoe is here completely over-ruled, by the swing steerage, with which the hoes may be guided to the greatest nicety, doing every execution among the weeds, without a possibility of injuring the corn, if common caution be used. This implement is so constructed that the hoes may be altered to suit different widths, from seven inches onward; the inverted hoes are preferred when the distance between the rows is sufficient to admit them.

Mr. Wm. Torr, jun., of Riby, near Caistor, Lincolnshire—a Horse Hoe, manufactured by Mr. Thomas Hunt, of Ulceby, near Barton.

Messrs. W. Drummond and Sons, of Stirling—a Horse Hoe, invented by Mr. J. Wilkie, of Uddingstone, near Glasgow, and manufactured by Mr. Wm. Wilson, of Larbert, Stirlingshire.

Mr. P. Love, of Naseby Manor, Northamptonshire—a Horse Hoe, manufactured by Mr. J. Miller, Smith, of Wyneford by Glasgow.

Mr. T. Huckvale, of Over Norton, near Chipping Norton, Oxon,—a Horse Hoe, of his own invention and manufacture.—The improvement in this implement consists in its revolving cutters for thinning the turnips in the row, and its working nearer to the turnips than the common horse hoe, at the same time moving more of the soil.

Mr. J. Howard, of Bedford—a Horse Hoe. Invented by Mr. W. Armstrong, of Hawnes, Beds.; manufactured by Mr. J. Howard.

The R. Hon. Earl of Ducie, of Woodchester Park, Gloucestershire—a Horse Hoe. Invented by Mr. J. Morton, of Chester Hill, and manufactured by his lordship. The peculiarity of this implement is that the wings in expanding or contracting move parallel to each other, like a parallel roller, so that the edges of the coulters are always in the direction of the draught. This is not the case with those that are fixed to the beam with hinges.

Mr. J. Binns, of Lancaster—a Horse Hoe, of his own invention, and manufactured by Mr. J. Gibson, of Lancaster. This machine was sold.

Mr. J. C. Grant, of Stamford, Lincolnshire—a Horse Hoe, of his own invention and manufacture.

Mr. J. Hamilton, of Tortherwald, Dumfries—two Horse Hoes, of his own invention and manufacture.

Mr. W. Groundsell, of Louth, Lincolnshire—a Horse Hoe, of his own invention and manufacture, being so fitted up as to clean one row at once, or three rows if required. It will answer for turnips, beans, potatoes, and mangel wurtzel.

DRILLS TO BE WORKED IN THE FIELD.

Messrs. White and Leith, of Worksop, Nottingham—Drills. Of their own invention and manufacture, as follows:—1. This drill for general purposes—say eight rows for corn, turnips, rape seeds, &c., with or without small tillage. It will deposit anything accurately as large as inch bones: can sow any quantity of tillage per acre, with the same cups, by simply turning a regulating screw; the quantity of seed is regulated by putting on different-sized wheels. The tillage and corn comes down two separate spouts and coulters, so that the tillage can, if required, be put an inch or two deeper in the ground than the corn or turnips, which prevents any possibility of its injuring the seed. It has lever coulters, and a guide bar at hind end of the coulter beams, which entirely prevents the beams from varying so that the rows are sure to be all the same distance.

It has also a press apparatus, so that by putting that into power it will make the coulters enter the strong soils when the weights on the beams cannot do so. White and Leith not inventors of the whole of the drill, but of the greater part of it, and other parts improved. 2. Drill to sow one row of turnips and tillage on ridges, similar to the above, in the regulation of the tillage, &c.; and the depositing of turnip seed on a simple and safe plan. There are four rows of holes in the brass roller, which is part covered with a brass slide; you can have either one or one a half, and so on up to four rows, according to the quantity wanted to be sown. It is regulated by a key, so that no one can alter it without the key, so that what you set it to sow it will do so. Invented by White and Leith.

Mr. J. Smith, of Peasenhall, near Yoxford, Suffolk—Turnip and Manure Drills, of his own invention and manufacture. The seed and manure drill to exhibit and put to trial, is for 3 rows, at 18 inches apart, or 2 rows at 27 inches, and to be varied more or less as may be required. It has, when for ridge drilling, 2 levers, with universal joints attached, to afford seeds and manure to be deposited upon the top of the ridges, whether regularly or irregularly ploughed. It has also his invented cogging apparatus, applied for drilling hilly land, and a sliding axletree, that the wheels may at all times run in the centre between the rows.

Mr. J. Winrow, of Nottingham—an improved Turnip and Corn Drill, with Fan for spreading Soot. Of his own invention and manufacture.

The R. Hon. Lord Weston, of Felix Hall, Kelvedon, Essex—a Patent Corn Drill, invented by his lordship, and made by his lordship's workmen.

Mr. T. Hunter, of Ulceby, near Barton, Lincolnshire—a Corn, Turnip, and Manure Drill, invented and manufactured by Mr. T. Hunter.

Messrs. W. Drummond and Sons, of Stirling—a Turnip and Manure Drill, invented and manufactured by Mr. J. Sidey, of Pitcairn Green, Perth.

Mr. R. Hornsby, of Spittle-gate, Grantham—a Drop Drill, also fitted for general purposes. Invented and manufactured by Mr. R. Hornsby.

The Rev. W. L. Rham, A.M., Winkfield, Berks.—a Drilling and Dibbling Machine. Invented by the Rev. W. L. Rham, and manufactured by Messrs. Perry, Barret, and Exall, of Reading.

Messrs. Edmunds and Huckvale, of Banbury, near Over Norton, Oxon—a Drill and Land Presser, invented by them, and manufactured by Mr. John Rieby, of Banbury. The improvement in the presser consists in placing the pressing wheels on levers, to meet the inequalities of the soil. The improvement in the drill is its expeditious way of regulating the quantity of seed. By taking off the pressing wheels other levers with their shares are attached, and it works well as a common drill.

Messrs. R. Garrett and Son, of Leiston Works, Saxmundham, Suffolk—Various Drills, of their own invention and manufacture, as follow:—No. 42, Drill for Turnips and Manure. A 2. Coulter frame, seed and manure ridging drill for one horse draught, with separate coulters for seed and manure, with pressing rollers which form the land into ridges to precede the coulters, and a second roller to follow the coulters and close the rows. With this drill one horse and a man will drill from eight to ten acres per day. No. 12, Corn Drill, A 13. Coulter corn lever drill, with a turnip and mangel-wurzel barrel, adapted for all descriptions of soil, and for the most hilly cultivated lands, with a lightening apparatus to act upon both sides, so that the drill may be worked from alternate ends to regulate the seed equally when going up or down hill; and the box is so partitioned as to keep the delivery regular when drilling on side hills. No 45 A, Seed Sowing Engine. This accurately-working engine is so constructed that the small heavy seeds, such as clover, trefoil, and suckling are delivered from cups, while the lighter grass seeds, such as rye-grass, &c., are, with the same operation, brushed out of a separate apartment in the box, down the same conductors with the other seed. This easy and simple method, whereby the required quantities of each seed are nicely mixed and evenly sown all over the land, deserves particular attention, and is performed by merely turning a regulating screw at the end of the box for the rye-grass and for clover, &c. changing wheels on the end of the cup barrel. By these means the objection to mixing the clover and rye-grass is remedied. A Brush Seed Sowing Engine, to cover 10½ feet. A Plough for general purposes, with Drill for Turnips and Mangel-wurzel attached. A Plough to answer two purposes for ridging the land, and afterwards Horse Hoeing. A Rackheath Subsoil Plough. A Horse Hoe, exclusively for ridge work.

Mr. J. Hamilton, of Tortherwald, Dumfries—a Double Turnip Drill, improved and manufactured by himself.

Mr. W. Groundsell, of Louth, Lincolnshire, Drills, of his own invention and manufacture.

SCARIFIERS OR OTHER IMPLEMENTS,

(FOR STIRRING AND CLEANSING LAND, TO BE WORKED IN THE FIELD.)

Mr. J. Howard, of Bedford—Scarifier or Harrow, invented by Mr. W. Armstrong (the patentee), of Hawnes, Beds., manufactured by Mr. J. Howard.

Mr. P. Love, of Naseby Manor Farm, Northamptonshire—a Grubber or Scarifier, invented by himself, and manufactured by Messrs. A. and W. Smith and Co., of Paisley, N. B.

Messrs. W. Drummond and Sons, of Stirling—a Scarifier, invented by Mr. J. Kirkwood, of Tranent, East Lothian, and manufactured by Messrs. J. Slight and Co., of Edinburgh.

Mr. T. Hunter, of Ulceby, near Barton, Lincolnshire, —a Scarifier of his own invention and manufacture.

Mr. F. Harling, of Sedgwick, near Kendal, Westmoreland—a Scarifier or Stitch, or Rod Harrow, of his own invention and manufacture.

The Rt. Hon. the Earl of Ducie, of Woodchester Park, Gloucestershire—a Cultivator or Scarifier. Invented and manufactured by Mr. J. Morton, of Chester Hill. This implement is so constructed that the coulters or teeth not being fixed in rows, cannot collect weeds or turf, which, when the land is foul, render implements of this description unfit for use. The working part of this machine enters the ground at an angle of 10 degrees. Two horses and a man can cultivate five acres in a day, leaving the land hollow, and all the weeds on the surface.

Mr. J. Hamilton, of Tortherwald, Dumfries—a Scarifier, of his own invention and manufacture.

HORSES TO COMPETE IN THE FIELD.

Mr. R. Almond, of Standish, Lancashire—a Pair of Horses.

Mr. Pusey, of Pusey, Berks—two horses.

Mr. H. Turner, of Killingworth, White House, near Newcastle, Northumberland—Pair of Mares.

Mr. W. Webster, sen., of Upton, Cheshire—Pair of Horses.

Mr. E. Deane Falkner, of Fairfield Hall, near Liverpool, Lancashire—Pair of Mares.

Mr. W. Webster, jun., of Upton, Cheshire—Pair of Horses.

Mr. R. Podmore, of Shotton, Flintshire—Pair of Horses, one 5 years old, and one 8 years old.

The Hon. E. M. L. Mostyn, of Mostyn, Flintshire —Pair of Horses.

Mr. W. Ellison, of Sizergh Castle, near Kendal, Westmoreland—a Horse.

Mr. Almond, of Standish, Lancashire—a Single Horse, 4 years old, bred by Mr. Richard Walker, of Layton Hall.

Messrs. H. Jump and Sons, of Vauxhall Mills, Liverpool—a Pair of Horses, 8 and 7 years old.

SEED WHEAT, WHITE.

Mr. I. Ellis, of Arlington, near Guilford, Surrey—14 bushels of Drewett's improved Chidham Wheat, grown on a Sandy Soil, drilled about 2½ bushels per acre at 9 inches, on one year's lay. Dung, about nine loads per acre.

Mr. F. Sheridan, of Bedfont, Middlesex—14 bushels of Drewitt's Improved Chidham Wheat, grown on a loam, on a substratum of gravel and on a clover ley.

Mr. J. Pocock, of Burnham, Bucks—14 bushels of Chidham Wheat, grown on a light, loamy soil, after a crop of beans, which had been manured previously with cut dung, but no manure used for the wheat.

Mr. T. Fullard, of Thorney, Cambridgeshire —14 bushels of Fullard's White Wheat, grown on a silt and clay soil.

Mr. W. King, Bramley, Surrey—14 bushels of Drewitt's improved Chidham Wheat, grown on a sandy loam, one year's clover, layer dressed with farm-yard manure, about eight cartloads per acre, drilled at nine inches wide.

Mr. G. Marshall, of Godalming, Surrey—14 bushels of Drewitt and Son's improved Chidham Wheat, grown on a sandy soil.

Mr. D. Maydwell, of Leatherhead—14 bushels of Chidham Wheat, grown on a chalk, or a clover lay, with seven cartloads of horse-dung per acre, drilled.

Colonel le Couteur, of BelleVue, Jersey,—14 bushels of Belle Vue Talavera Wheat.

SEED WHEAT, RED.

Mr. J. Pain, of Felmersham Beds,—14 bushels of Burwell Wheat, grown on a gravel. The preceding crop was mixed clovers, and fed off with sheep. No other manure used, sown broadcast, about two bushels three pecks per acre.

Mr. E. D. Falkner, of Fairfield, near Liverpool,—14 bushels of Champion Red Wheat, grown on a sandy and loamy soil, as follows :—

This wheat has essentially a white chaff, but not entirely so, some few heads having red chaff, though not otherwise distinguishable; grows luxuriantly with long but stiff straw, which stands well till ripe, if the seed be well buried, which it requires to be. It likes deep ploughing and stiff land, for the ground from whence the seed was obtained, three or four years ago, being light, crops of only light and indifferent quality of this wheat could be obtained off it, and in the same field from whence the sample was taken, a part being somewhat lighter than the rest, the produce fell off materially. The previous crop was potatoes, manured with farm-yard dung about 22 to 24 tons per acre. No further manure whatever applied to the wheat crop. Ground ploughed nine or ten inches deep, in about 11 to 12 inch furrows. Quantity of seed about $3\frac{1}{2}$ imperial bushels per acre, sown broadcast after the plough before harrowing. Land old tilled, moderately stiff, not strong. Substratum, red brick clay, underdrained. Crop reaped by sickle. Produce 60 to 62 imperial bushels corn, 2 tons 3 cwt. straw per statute acre. Present sample about $61\frac{1}{2}$lbs. per imperial bushel. Growing crops from this seed, sown by several neighbours, in prospect (as far as present appearances go) superior to the crop of 1840, which produced the seed.

Mr. W. L. Wakely, of Rainham, Kent,—14 bushels of Champion Red Wheat, grown on a sandy and loamy soil, and on a bean stubble. Its particularities are, that it produces a greater quantity of flour from a bushel and less offal than other sorts.

ROOTS, SEEDS, &c.

Thomas Gibbs and Co., seedsmen, &c., to the honourable Board of Agriculture of England, and to the honourable Board of Agriculture of Sweden, &c., corner of Half-moon Street, Piccadilly, London—Samples of seeds of all the natural grasses used in laying land to permanent pasture, and improving old leys; also of turnips, clovers, wheats, barley, oats, and other agricultural seeds. Dried plants of the natural and artificial grasses and other agricultural plants. Specimens, in the ear and straw, of various kinds of wheat, &c. Roots of this year's growth of the new white carrot, a variety which has been found to be a valuable addition to agricultural roots, from its acreable produce and nutritive qualities. Some very large roots of the long red mangold wurtzel, and of the globe kind, of the growth of 1340, and which were exhibited at the Smithfield Show, proving how much better this root will keep than the turnip.

Thomas Gibbs and Co. also exhibited, on the part of the Royal Agricultural Society, models of primitive agricultural implements, employed in North Germany, presented to the society by Capt. Carr, a description of which is to be found in the Society's Journal. Models of Ploughs, Scarifiers, and implements employed in agriculture, which have been from time to time presented to the society.

Mr. W. Sherrard, of Kilbogget, Dublin, a sample of Heligoland Beans. The beans on an oaten stubble, in drills 30 inches apart, with about 15 or 16 tons of farm-yard manure to the statute acre. The manure laid in the drills in which the seed was sown, and subsequently earthed and treated in the same manner as a potato crop. Produce, about 9 barrels of 20 stone each to the statute acre, or 180 stone.

Mr. George Gibbs, of 26, Down street, London,—specimens of various Wheats, in ear; ditto of the Kintbury Skinless Barley, and several other varieties in ear; samples of the grain of several varieties of Wheat; samples of Barley, in grain; specimens of the herbage of Grasses; samples of Seeds of ditto; specimens of a Clover, the seed of which was found in wool imported from South America; specimen of a new variety of Tare, principally for Sheep-feed; roots of different agricultural Carrots; various samples of agricultural Seeds.

Mr. Thomas Fullard, of Thorny, Peterboro',—three varieties of Wheat, one of Barley, one of Tares, one of Oats, one of white Tares, one of Beans, and Turnips of many varieties.

Mr. Wm. Skirving, of Liverpool,—Roots and Trees, and samples of Seeds; specimens of Swede Turnips, introduced by himself; also specimens of the Araucaria Imbricata, or Chili Pine Tree, which has been proves sufficiently hardy for any part of England, and the Highland of Scotland; is handsome, and produced valuable Timber, and requires nearly the same treatment as the Scotch Fir.

Mr. H. D. Cormack, Seedsman, Deansgate, Manchester—from Messrs. Cormack, Son, & Oliver's, New Cross, London, exhibited specimens in a *growing state*, (none on any other stand) of the most approved permanent pasture grasses and clovers for laying down land, and for renovating old unproductive meadows; also dried specimens and seeds of the most essential varieties adapted to agricultural purposes. Turnips of Cormack's improved purple-top Swede, purple-top yellow bullock, yellow globe, and Dale's Hybrid; long red and globe mangel wurzel, white field and Altrincham carrots, &c., all of this season's production. A specimen likewise of a new and prolific pea, fully three weeks earlier than the Warwick, frame, or indeed any other sort now cultivated.

In addition to the implements exhibited by Messrs. Drummond, proprietors of the Agricultural Museum, at Stirling, already enumerated, we observed a particularly tastefully arranged table or stand on which were exhibited a very extensive collection of grasses and grains in hand samples, and dried bunches of plants, all plainly labelled. This table was surmounted by a correct model (of the real material) of a Stirlingshire corn stack; this model, we learn, has been purchased by a gentleman of Hamburgh, where it is to be sent forthwith. Among the grasses and grain we observed several new and promising varieties, to which we may advert in a future number. We were glad to notice that the entire assortment from the establishment of the Messrs. Drummond, appeared to attract such general notice, and we are sure they will have no cause to regret exertions on this occasion.

Of the many useful articles exhibited at the show yard of the Royal Agricultural Society, at Liverpool, none attracted more attention, or were more generally admired, than two beautiful little models exhibited by Mr. Benjamin Edgington, of Duke-street, Southwark, and 208, Piccadilly, London. One of a Marquee which had been honoured by the presence of Royalty on more than one occasion—the other that most useful article, a Rick-cloth, covering a rick of hay, with tackle and poles, in the most complete manner. This attracted the attention of the Lancashire farmers, who, with all their natural shrewdness, have too much neglected this most important article; indeed, we should say from its great utility and moderate cost, no man calling himself a farmer should be without. He likewise exhibited some beautiful silk flags; we noticed the royal standard and union jack, and a circular tent, which would be an ornament to any gentleman's lawn.

The exhibition of agricultural implements by the Ransomes of Ipswich, was one which attracted universal attention, and two of those gentlemen were present during the two days of the show. We had a catalogue of their exhibition put into our hands, by which our attention was first directed to a range of upwards of thirty ploughs, of the sorts most in use, and peculiar to the various counties, including most of those to which the attention of agriculturists has been so frequently drawn by reports of their performances at public trials. Next in order were some agricultural machines made up in a high style of workmanship: these were chaff-engines, turnip-cutters, mills of various descriptions, and thrashing machines for manual and horse power; and one with a portable steam engine of five horses power, which was very compact, and admirably adapted to the purpose, appeared to be the great novelty of the day. This, we understood, would be put into actual operation on Saturday, in the presence of a deputation of gentlemen, at a farm near Liverpool, for the purpose of their specially inspecting its performance—a report of which we hope to have the pleasure of giving in a future paper.

We also observed Mr. Crosskill, Beverley, Yorkshire, had with his usual perseverance again brought his celebrated clod roller, which, we are told, in addition to its other useful purposes, has been found valuable upon lands infested with the wire-worm. This, with his thrashing machine, and a few minor things, caused Mr. C. to have his full share of attention.

In adverting to the proceedings at the Meeting of the Royal Agricultural Society at Liverpool during the past week, and reported in our columns this day, we have great satisfaction in being enabled to congratulate the Society upon a most successful and satisfactory result. Whether we regard the interest displayed in the objects and operations of the Society, the numbers and quality of the stock exhibited—near five hundred head—or the extent and character of the exhibition of implements, it is abundantly manifest that the utility of the Society is duly appreciated by all those who are competent to form an opinion upon the subject. The business proceedings commenced on Monday, by a meeting of the Council, at which those arrangements which could only be made upon the spot, were finally settled. On Tuesday, the Judges of the implements were engaged in examining and making their award upon the implements in the Show-yard, whilst the Stewards of the Implement-yard—Mr. Handley, Mr. Wilson Patten, and Mr. Miles—were occupied in making the necessary arrangements for the trial of implements, and the competition for the horse prizes, which was to take place on the following day, Wednesday, at the race-course. The Stewards of the Cattle-yard—Earl Spencer, Mr. Druce, and Mr. Ledger, with Mr. H. Gibbs, the Director of the Show—were occupied in receiving and placing the animals in proper order for the examination by the Judges of the cattle on Wednesday. In the afternoon, the Members of the Council dined with the Mayor of Liverpool, upon a special invitation given some months back, and were met by many of the residents of the town and neighbourhood, the party amounting in the whole to nearly seventy persons. It could not fail to be highly gratifying to the members of the agricultural body, on their holding a meeting in the great commercial town of Liverpool for the benefit of the agriculturists in the vicinity, to be welcomed in so hospitable a manner by the chief magistrate of the town, representing in his own person the commercial class, between whom and the agricultural class it is of the utmost importance to their mutual interest that a sound and friendly feeling should subsist. On Wednesday, that part of the yard in which the implements were placed, being separated by a temporary fence from the remainder which contained the cattle, was opened to visitors, at a charge of five shillings each person. And here we will offer a word in explanation of remarks made by some persons who thought this charge too high. The immediate object of fixing this apparently high sum, was not for the purpose of raising a revenue, but of thinning the numbers who would be induced to visit the yard were the charge less, and thereby affording to persons desirous of carefully examining the implements, with a view to purchase, to do so with facility, it being wholly impracticable when the yard is thronged with people. That the charge is not too high to effect the object contemplated may be clearly seen, from the fact, that upwards of sixteen hundred persons visited the yard upon that day. The weather was very cold and wet, which doubtless prevented many from attending, and was not only very disagreeable, but tended much to impede the success of the trial of implements, and the competition of horse teams, which took place on the race-course. Not having a correct list of the prizes awarded to the exhibitors of implements, we shall here only name those particular implements which seemed to attract the most notice:—a horse hoe, of a peculiar construction, invented by Messrs. Garratt; a portable steam-engine, attached to a thrashing-machine, exhibited by the Messrs. Ransome; a new chaff-cutter, exhibited by Earl Ducie; and a horse-drag, exhibited by Mr. Grant. The Messrs. Ransomes' portable steam-engine was tried on Saturday, and performed its work, we are informed, in a manner highly satisfactory. Amongst the other implements tried in the field, was a trench plough, sent from Jersey by Colonel Le Couteur; we are told that it performed its work admirably, of which we think we cannot give better proof, than by stating that it was purchased by the Messrs. Ransome. We may here notice that Colonel Le Couteur has again, a second time, been a successful exhibitor for the prize for seed wheat.

In the afternoon of that day, Wednesday, the Council Dinner, which was laid for four hundred and sixty-three, took place, when the award of the prizes for the animals was read by the President.

For an opinion upon the merits of the cattle and sheep, we refer our readers to Earl Spencer's speech upon that occasion.

The fence which separated the Implement and Cattle Yards having been removed, the whole was opened to the public on Thursday, at two shillings and sixpence each, and on Friday at one shilling each, and during the two days upwards of twenty thousand persons visited the show. In the afternoon of Thursday, the Great Dinner in the Pavilion, laid for two thousand eight hundred persons, took place; and passed off with as much order and regularity as can ever be expected from so large a body of persons collected in one room. Mr. Pusey presided, and Mr. Handley, the new President, acted as Vice-President.

The Sale of Stock, which was conducted by Mr. Wetherell, of Durham, the well known auctioneer, took place in the Show-yard on Saturday, when some young bulls were bought at very high prices, to be sent out to Australia, by Mr. Sturgeon, who sends out a great many to the colonies every year.

We cannot close these remarks without bearing testimony to the spirited manner in which the Messrs. Holmes, the contractors for erecting the Pavilion and for enclosing and fitting up the Cattle-yard, proceeded with the works from the commencement, and to the liberality which they evinced in rendering every part of it commodious and satisfactory.—*Mark Lane Express.*

ON BRAN AS A MANURE.

Sir,—As this is the season for preparing the turnip crops, I am desirous of calling the attention of your readers and the scientific agriculturists, to the consideration of bran (the husk of wheat) as a manure, not only for turnips, but also for wheat and grass. The great facility that every farmer has of obtaining it from his neighbouring miller, and its exceeding cheapness (now about 4*l.* 10s. per ton,) warrants their trying a series of experiments in drilling it with the turnips and wheat, and putting it over their grass lands as a top dressing; substituting it for bone and other manures, which are costing two and three times as much as the bran would.

Experiments have been tried, but not extensively enough to warrant its being said how much is saved in expense, and what quantities per acre ought to be used to render the best return.

It is to this point that I wish attention to be directed, and as Sir Humphrey Davy in his "Elements on Agricultural Chemistry" writes—"Nothing is more wanting in Agriculture, than experiments in which all the circumstances are minutely and scientifically detailed"—would some of your readers assist this object, and drill a small portion in each of their fields of wheat and turnips, with bran in quantities from 3 to 6 cwt. per acre, and report the result in your paper; that is, the quality of the other manure used, the respective cost for manuring an acre, the yield, and the quality of the ground experimentalized upon.

The following extracts would leave, in theory, bran to be at once the cheapest and best manure that could be employed:—

"Phosphate of magnesia, in combination with ammonia, is an invariable constituent of the seeds in all grasses.

"*The bran of flour contains the greatest quantity of it.*

"The perfect development of a plant according to this view, is dependant on the presence of alkalies or alkaline earths; for when these substances are totally wanting, its growth will be arrested, and when they are only deficient, it must be impeded.

"So likewise none of our corn plants can bear perfect seeds, that is, seeds yielding flour, without a large supply of phosphate of magnesia and ammonia; substances which they require for their maturity.

"It is the greatest possible mistake, to suppose that the temporary diminution of fertility in a soil is owing to the loss of humus—it is the mere consequence of the exhaustion of the alkalies." *(Liebig.)*

	Constituents of 100 parts of the Ashes.					
	Soluble Salts.	Earthy Phosphates.	Earthy Carbonates.	Silica.	Metallic Oxides.	Loss.
Ashes from 1000 parts of dried Wheat Straw, yield 43 parts	22. 5	6.2	1	61.5	1	7.8
Ditto from Seeds of Wheat............ 13 "	47.16	44.5	—	0.5	0.25	7.6
Ditto from Bran .... 52 "	44.16	46.5	—	0.5	0.25	8.6

Sir H. Davy.

From this it would appear that 7 cwt. of bran contains all the stimulating salts sufficient for the growth of five qrs. of wheat and its straw, to a statute acre of ground.

The rest of the bran, consisting of woody fibre, mucilage, saccharine matter, and gluten, which, when it has again undergone fermentation, is in the exact proportion necessary for the formation of the like plants.

This is convincingly conclusive as regards wheat. Let us now examine for the turnip crop. Liebig, alluding to horse dung, writes:—

"The latter (the salts) are evidently the substances to which our attention should be directed; for they are the same which formed the component parts of the hay, straw, and oats with which the horse was fed. Their principal constituents are the phosphates of lime and magnesia, carbonate of lime, and silicate of potash; the first three of these preponderate in the corn, the latter in the hay.

"The peculiar action then of the solid excrements is limited to their organic constituents, which thus restore to a soil that which is removed in the form of corn, roots, or grain.

"When we manure land with the dung of the cow or the sheep, we supply it with silicate of potash, and some salts of phosphoric acid. In human fœces we give it the phosphates of lime and magnesia; and in those of the horse, phosphate of magnesia, and silicate of potash.

"In the straw which has served as a litter, we add a further quantity of silicate of potash and phosphates, which, if the straw be putrefied, are in exactly the same condition in which they were before being assimilated."

These dungs are acknowledged to be of the greatest benefit by all turnip growers for their land; the whole of which must hold equally good, if these extracts from Liebig are compared with the analysis of the ashes of bran by Sir Humphrey Davy, in which the large proportion of 46.5 per cent. is contained of phosphates, besides other soluble salts.

Again, by the analysis of Fourcroy and Vauquelin, ox-bones contain but 39 per cent. of phosphates, thus:—

Of decomposible animal matter..	51
Phosphate of lime............	37.7
" " Magnesia..........	1.3
Carbonate of lime (chalk)......	10
	100

The uncertainty in the effect of bone manure must be always great from this fact, that, dependent on the bone used, the carbonate of lime (chalk) "varies from 1 up to 25 per cent," whilst the phosphate is from "52 per cent. in the hog, up to 90 per cent. in the elk." *Sir H. Davy.*

Let bones as a manure be of ever so great an advantage, yet, if in the bran there be more than sufficient stimulating salts necessary for the urging on the plants, and four times as much soluble matter as is contained in bones, calculating that both are to cost the same amount of money, it becomes pretty conclusive that the bran must be the more desirable; at all events, we have, in the above great authorities, enough to justify the pursuing the subject by extended experiments.

Having drawn attention to the subject on the most important crops of wheat and turnips, I will merely add that it has been tried practically, and could be proved theoretically, to be of considerable benefit when applied as a top dressing to meadows.

Hoping in due season to notice this request responded to by the experimentalist, from the perfect conviction that it must be for the general benefit of agriculture,

I remain, Sir, yours, very respectfully,
July 3. S. H.

AGRICULTURAL QUERIES.

HOW TO PURIFY POND WATER.

Sir,—It is my lot to be situated in a part of the country where the inhabitants have to depend for their principal supply of *water* on the *ponds* in the neighbourhood of their dwelling. At the present season of the year the water in these ponds, besides being of a very bad colour, is frequently of a bad *odour*, which no filtering is able to remove. Should any of your numerous readers be aware of a remedy that may be applied for the cure of this evil, and will kindly communicate the same, they will have the thanks of many, and particularly of

Your obliged and constant reader,
J. H.

PS. Would it be of any service if lime were thrown into the pond?

THE BEST MODE OF IMPROVING THE HERBAGE ON POOR MEADOW-LAND WITH A CLAY SUBSOIL.

Sir,—Probably some one of your numerous readers may favour me with an answer to the following queries, if you will kindly give them a place in your valuable Journal.

If, on inferior lands, where at present the grass produced is of bad quality, and on a clay subsoil, any plan for bettering the herbage could be adopted? Would sowing the different kinds of good grasses by carrying them out mixed with the manure, be likely to answer; and what time of the year would be the most proper for the purpose? Should the ground be slightly harrowed before, and brushed after, the seeds and manure have been carted on the land? or would it be a good way to turn the ground at perhaps the depth of two inches, and sow some good grasses on the soil so turned up? or would any kind of manure be likely to bring a good herbage, without the seed?

I am, Sir, your obedient servant,
Chard, Somerset. B. F.

ON IRRIGATION.

Sir,—I shall feel obliged if you, or some one of your correspondents, would state why the subject of irrigation is so little attended to; and on what ground some of the most intelligent cultivators of the soil abandon a practice which appears to me to produce the greatest quantity of the most nutritious herbage, upon a given quantity of ground, and at the least possible expence? My little experience in this art enables me to say, that where grass land is eligibly situated, it will, by the effects of water, regardless of seasons, produce full two tons of hay of the best quality per acre, which may be taken off to manure upland, without impoverishing the soil from whence it came. This, with other concomitant advantages, shall be more particularly enumerated if occasion requires; but entertaining, as I do, an idea that the country is suffering an egregious loss by the subject not being more fully understood, I trust an apology for troubling you will be unnecessary. I am, Sir, your obedient servant, A Subscriber.

June 23, 1841.

THE TURNIP FLY.

Sir,—I have this year had twenty acres of turnips destroyed by the turnip-fly. I have sown a second time, and the plants are again attacked, I have at various times tried the usual remedies, with but very partial success. May I be allowed to ask if any of your readers can inform me of an effectual remedy? If they can, I beg them to do so through the medium of your paper. I am, Sir, your obedient servant, J. H.

Manor Farm, Beds.

ON FINGERS AND TOES IN TURNIPS.

Sir,—I am a constant reader of your valuable publication, the Farmer's Magazine, in which several writers enumerate a disease highly injurious to Swedish Turnips, designated fingers and toes, but none of whom mention the cause, or state a remedy. Probably through the medium of your widely circulated paper (Mark Lane Express) some person will favour me with some information on the subject. I have had repeated failures from the above mentioned disease, on land that never grew turnips before—the soil a deep loamy clay.

Yours respectfully, Juvenis.
Gedney, South Lincolnshire, May 19th.

ON ALLOTMENTS TO LABOURERS.

Sir,—I should be highly obliged if some of your numerous subscribers would be kind enough to give me, through the medium of the Farmer's Magazine, particulars of the *terms*, &c., including all the rules, &c., on which allotments are let to the poor in their different localities. I am desirous of obtaining this information, as much evil has arisen from the system adopted in my neighbourhood.—I am, your obedient servant,

A Subscriber.

ANSWERS TO QUERIES.

ON A DRILL ATTACHED TO A PLOUGH, &c.

Sir,—In answer to the enquiries of your correspondent in your April number, as to a drill to be attached to and worked with the plough, I can inform him that such a machine has been invented and constantly used by Henry Hedger, of Amberley, near Arundel. Hedger is farm bailiff to Robert French, Esq., of Littlehampton, who occupies land at Amberley.

The drill in work was exhibited about two years since, at the agricultural meeting of the Arundel Farming Society, and so much approved of as to gain an honorary reward for its inventor.

The drill is simple in construction, can be attached to any plough, and answers *perfectly* for wheat, barley, oats, beans, peas, tares, and turnips, with no inconvenience as to the strength required in ploughing the land.

Can you, or any of your obliging correspondents, inform me of the result to be expected from the application of bone dust to meadow or pasture land, and at what season, and in what quantities to be used per acre? I am, Sir, your obedient servant,

Arundel, Sussex, 15th May, 1841. Arundel.

ITALIAN RYE-GRASS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—At the Chelmsford Agricultural Show, I exhibited specimens of Italian rye-grass, grown upon my farm at Hatfield Peveril. This grass measured five feet four inches in height, and was sown early in August 1840. A portion of it was cut early in May, and on the 12th a square rod was cut and weighed, and contained 194lbs., being upwards of 13 tons per acre. Horses and other cattle were foddered upon it during the month of May, and it was found to be quite as nutritious, and as readily eaten, as the lucerne produced in the same field. The second crop is reserved for seed, and is almost sufficiently ripe for cutting. The estimated quantity is above 10 tons per acre in its green state, or equal to about 2 tons per acre as hay. Your having copied into *The Mark-lane Express* the report of the Chelmsford Agricultural Society, which noticed my exhibition of this grass, has produced several letters of enquiry upon the mode of cultivation &c.; and with your permission, I embrace this opportunity of making the communication through the columns of your widely circulated paper.

The usual time of sowing Italian rye-grass is in the spring months, with Lent corn; but if the season proves showery, it will grow as high as the corn with which it is sown, and expand itself so much, as to make a weakly shoot in the succeeding spring. I have found by experience, that August is the proper month for sowing, and upon land prepared as for turnips—by several ploughings, and if possible well manured.

The soil most suitable is tender loam subsoil, and the land best adapted for Swede turnips will be equally so for this valuable grass; it succeeds well after a crop of tares, if mown early as fodder, and will upon any good soil amply repay the extra expense of cultivation bestowed upon it.

The qualities possessed by this grass recommend it especially to the notice of the agriculturist. It produces the earliest feed, and of the most nutritious quality of any of the grasses, and grows rapidly from the scythe or after close feeding. For ewes and early lambs it is invaluable; and at the time when the turnip crop has become useless, and before clovers and rye-grass are sufficiently advanced, it is in perfection, and cattle, horses, and sheep, will eat it in preference to any other food. If mown early, it will again be ready for the scythe in July, or for seed in August; and it is so attractive to hares and rabbits, that they will leave their usual haunts to obtain it.

It does not succeed near so well in the second year as in the first; but after the second crop is taken, it may be ploughed up, and the roots collected, burnt, and spread; or, which is a better practice, sheep may be folded upon it with turnips and cake, and the ley may then be ploughed for the wheat or oat crop.

If it becomes very stout in the autumn, it may be fed; but if feeding is resorted to then, it never succeeds so well, or grows so early in the succeeding spring. And if the land is good and highly manured upon which it is sown, the latter part of August should be selected for sowing.

As the seed has been of late mixed with common rye-grass, there is difficulty in obtaining a pure stock; but if it is obtained by a second cutting, none of the Pucey or common rye-grasses will have come to maturity, and it may thereby be obtained true in stock.

I hope the limited time I have to devote to this subject, will nevertheless render what I have stated plain and clear to be understood. Any enquiry further necessary, I shall be ready to answer.

I am, Sir, your obedient servant,

Writtle, Essex, July 16. R. Baker.

ON THE PRODUCE OF MILK COWS.

Sir,—I have a cow in my stock which has had about 5 calves, two of which she has dropped since she came into my possession. She is now giving not less than 26 quarts of milk daily, and this appearing of a superior richness, induced me to try what weight of butter her milk for seven days would yield; the trial was completed yesterday, and the butter weighed 22lbs. 3½ozs. We make up our butter into printed lumps of 8ozs. each, and to the half pound weight a halfpenny of the new coinage is added.

No doubt but this statement will be considered by *the knowing ones* just in the same disposition as 40 tons of turnips from an acre grown; be this as it may, I can declare for its correctness, because the experiment has been carried on under the immediate superintendence of my wife, and she in this case (as she always does) made up and weighed the butter with her own hands.

I had a cow ten years ago which gave 20lbs. 6oz. in the week. Do you think the prize dairy cow at the Liverpool Meeting will have such solid pretensions to distinction as either of these animals?

I am, Sir, yours respectfully,

A Lancashire Agriculturist,

July 7th. near Manchester.

PLATE.—Mr. Bates's Cow.—The subjoined information was received too late to appear in the proper place:—

The Oxford premium Cow, July, 1839, at the Royal English Agricultural Society's Show, was also successful at the Yorkshire Agricultural Society's first show, in 1838, when she was three years old. She also gained the highest premium, as the best cow of any age, at the Yorkshire Agricultural Show at Northallerton, in August, 1840. She has been constantly milked twice a day since the 5th October, 1838; never put dry for calving on any occasion. She was by Duke of Cleveland (1937), her dam by Moleskin (2281), and grandam by Young Wynyard (2859), sometimes called Young Wellington. One of the best milking tribes of cattle for above eighty years, proving that the same tribe of cattle may be both great milkers, giving rich milk, and be great graziers; thus uniting all the desirable qualities of cattle in the same animals. Two bull calves from her are both in America, her last calf was a heifer, and is again in calf to Duke of Northumberland (1940), and keeps improving of herself.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JULY.

Since the date of our last month's report, the weather in most parts of England has been, we regret to observe, very unpropitious to the growing crops, particularly to those growing on heavy lands. The succession of deluging showers of rain, together with the frequent changes in the wind, has caused immense breadths of corn to be considerably lodged; while barley has suffered severely in this respect, especially in Essex, Suffolk, Kent, and Cambridgeshire. Taking, therefore, July as a whole, we are decidedly of opinion that it has proved the least favourable to agriculture, than any month that has preceded it during the present year. Still, however, should we be favoured with a fine seasonable atmosphere during August, we are firmly of opinion, that with some few exceptions, the late rains will have been productive of good—as the grain in the ear has been considerably increased, with a proportionate improvement in the quantity of straw.

As to the probable productive qualities of the forthcoming harvest, a variety of rumours is afloat, and many of them of a very contradictory nature. Having ourselves attentively inspected the wheat, barley, oats, beans, and peas, we are decidedly of opinion, that no just apprehensions exist that any material deficiency will be observed in the produce. Hence we conceive there exists good reasons for estimating the yield of most kinds of the soil's productions at a fair average—beyond which, our expectations do not extend. Beans and peas have much improved in appearance of late.

Every description of field labour has been seasonably performed; whilst the crops are much more free from noxious weeds than at this time last year.

Beasts and sheep have done remarkably well in their pastures; but the lambs, on being slaughtered, have not fully answered the expectations of the butchers, the quantity of internal fat being comparatively small.

As is almost invariably the case at this important period of the year, the value of all kinds of wheat, both of home and foreign produce, has risen from 1s. to 3s. per qr., and many extensive sales have taken place on speculation. Owing to this advance, the duty on foreign wheat has fallen to 23s. 8d., with every prospect of a farther reduction. In almost every market in the kingdom, the enquiry for barley has ruled heavy, but no depression can be noticed in the quotations. Good sound malt has been enhanced from 1s. to 2s. per qr.; other sorts being unvaried. There has been a steady enquiry for oats, most of which have come to hand in good condition, and previous rates have been well maintained. Beans, peas, and flour have had an upward tendency. That everything will be dearer during the ensuing month, we have no hesitation in saying, should not the weather become more genial; while, on the other hand, we feel persuaded that a fine temperature would speedily have a depressing influence upon prices.

A large quantity of potatoes, of a very superior description, has been offering in the various markets of consumption since our last; while, as it has proved more than adequate to meet the wants of the dealers, considerably lower rates have been submitted to by the dealers.

The turnip sowing has passed off remarkably well, the prevailing moisture having been favourable to the growth of that invaluable root. The young plants look very strong and healthy, with every prospect of heavy crops.

From Scotland, our accounts towards the close of the month were somewhat cheering, the wheat, barley, and oats being represented as only requiring warm sunshine to produce fine crops; and the pastures and sheep downs as well covered with verdure. At the various markets of consumption, a decided improvement has been observable in the parcels of wheat brought forward, with which the trade has been steady, at improved rates. The same observation may also be applied to most other grain.

In Ireland, the weather has been very unfavourable, yet most of the samples of corn have reached the various markets in excellent condition. For London and Liverpool, the shipments of oats from the various Irish ports have been on a very moderate scale. The value of most grain has been well supported in the different markets, with a steady inquiry.

We understand that the cutting of wheat commenced in some parts of Kent on the 26th, and that harvest was expected to become general by or shortly after the 10th proximo.

The following is our usual monthly statement of the supplies and prices of fat stock, exhibited and sold in Smithfield Cattle Market.

The numbers of beasts offering have consisted of 14,002; of sheep and lambs 155,294; of calves 800; and of pigs 4,029; while the prices have ranged as follows:—Beef from 3s. 4d. to 5s.; mutton 3s. 6d. to 5s.; lamb 5s. to 6s.; veal 4s. to 5s. 4d.; and pork 4s. to 4s. 10d., per 8lbs. to sink the offals. On each market day, the attendance of both London and country dealers has been tolerably numerous, whilst the demand has continued steady, at in some instances enhanced rates. It is pleasing to observe that both beasts and sheep have come to hand in much better condition than for many months past.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, July 28, 1840, and Monday, July 26, 1841.

At per 8lbs. to sink the offals.

	July 28, 1840.		July 26, 1841.	
	s. d.	s. d.	s. d.	s. d.
Coarse & inferior Beasts	3 4	to 3 8	3 4	to 3 6
Second quality do.	3 8	3 10	3 8	3 10
Prime large Oxen	4 0	4 4	4 0	4 4
Prime Scots, &c.	4 4	4 6	4 6	4 8
Coarse & inferior Sheep	3 4	3 8	3 4	3 6
Second quality do.	3 10	4 0	3 8	4 0
Prime coarse woolled do.	4 2	4 4	4 2	4 6
Prime Southdown do.	4 6	4 10	4 8	5 0
Lambs	5 0	6 0	5 0	6 0
Large coarse Calves	4 0	4 8	4 2	4 8
Prime small ditto.	5 0	5 2	4 10	5 0
Large Hogs	4 0	4 6	4 0	4 6
Neat small Porkers	4 6	4 8	4 8	4 10

SUPPLIES.

	July 28, 1840.	July 26, 1841.
Beasts	2,429	3,009
Sheep and Lambs	26,000	24,710
Calves	130	168
Pigs	400	613

The arrivals of slaughtered meat up to Newgate and Leadenhall markets have been limited, whilst the demand has proved heavy, at but little variation in the quotations.

NORFOLK.

The near approach to harvest, and the conflicting accounts from various counties respecting the condition of the wheat crop, have induced us to examine our own with greater circumspection; the result of which is, that we do not find any very marked peculiarity in the present year over those of ordinary occurrence. There is a partial falling off, even upon the best lands; here and there a field, or portions of fields, may be found defective, even to the amount of one-third of an average production, but we believe this failure is in no way sufficiently extensive to create alarm; moreover it must be admitted, that the drought has been of longer duration than the light-land farmers could have desired; but a moderate quantity of moisture has fallen, at a very important period, namely, while the ear was yet in blossom—not the heavy rains which are reported to have occurred in some counties, but light and genial showers, just such as would set the kernel, and thus perhaps compensate for the presumed deficiency in bulk, by the improved condition of the sample. With respect to the stock of wheat in hand, it is clearly perceptible that very few corn stacks are now outstanding; and as the value of grain has scarcely varied beyond the amount of sixpence a bushel during the season, it had the effect of creating what the farmers call a barn-door delivery; consequently the quantity of thrashed corn now in the hands of the grower is very small indeed. The barleys also are partially defective, but whether from the ravages of the wire-worm, or from what other cause, does not seem to be determined; generally speaking, the prospect is not bad, and even on those soils which are more particularly affected by a long continuance of dry weather, the plant has suffered less than might have been expected. Field peas are looking well; beans and oats, upon the recently cultivated meadow lands, peculiarly promising. In the midland districts the hay-crop is secured in excellent condition, the bulk very unequal, a heavy swathe in some places, but more frequently not half the usual quantity. Upon the whole line of coast, however, comprising a distance of seven or eight miles from the sea, the clover had scarcely been collected into heaps before the commencement of the late unsettled weather, a large proportion of which still remains in the fields, and have sustained more injury than could have been imagined in so short a period; the shortness of the first crop may yet be compensated by the more liberal production of herbage for summer feeding, especially after the late invigorating rains; still the circumstance of a limited stock of hay for winter use, and a short supply of green food during the last few weeks, has had the effect of reducing the value of store cattle, sheep, and lambs to a standard more commensurate with the interests of the graziers. The first-sown turnips came up partially and imperfectly from the want of moisture; latterly they have done better, nor have we heard much complaint about the fly; it may be presumed the weather has been too cold and dull for the urchin to play its customary pranks. Mangle wurzel are fast coming to the hoe, and we hope to give a good account of each of these descriptions of plants in our next communication.—July, 1841.

MID AND EAST LOTHIAN.

Wheat:—On an average is thin on the ground, but all standing as yet, excepting occasional fields; but I am sorry to say that the late and present wet close weather has injured it very much; by examining the finest fields closely, you find the blossom has never come out, and remains at the bottom of the cup. I have got in a great number of ears, as many as fifteen, eighteen, and twenty-three pickles, in this state; of course there can be no grain follow from these. There is also rust to a considerable extent going on, and even with fine weather there cannot be an average, though I dare say it might come near it; but with the weather that is still going on, the crop (and if this weather should continue fourteen days) will prove to be as bad as 1838—short in quantity, and with a great proportion of light inferior quality. Oats:—Very short in the straw, but well planted and corny in the ear, and with fine weather I should say will prove a good crop—a full average. Barley:—In East Lothian miserably thin; in Mid Lothian not so bad; but under any weather will prove a very short crop. With this wet weather, if it should continue much longer, it will be very coarse as to quality. Peas:—Going too much to straw, with a second growth having bloomed previously, the quality of the grain will be very unequal, and I think below an average in quantity. Beans:—Short in straw, but well podded, and I think a good crop, but the wet weather has also brought on a second growth, which will make the quality unequal. Potatoes:—A good crop, but they have also too much rain, which, if it continues, will make the crop a failure—if fine dry and sunshine, a splendid crop. Turnips:—A very bad crop. Hay:—Very light; a half-crop. Stock of Grain on hand, &c.:—The farmers, from the very fine weather we formerly had, and the agitation of the corn question, thrashed out largely, and I consider they will have none in six weeks; we shall therefore be dependent on our granaried stock, which is small. We have no free wheats, either Foreign, Scotch, or English: our stock consists only of 40,000 quarters of wheat in bond; last year at 2nd September, we had 150,000; we may get other 20,000, which will make our stock 60,000—under half of what we had last year; our millers and bakers have none, and are daily buyers from the farmers. Under all these circumstances I do not see but rather advancing rates may be obtained for wheat as we proceed in the season; and if this weather goes on, very high prices must of course ensue. I am led to think that the stocks all over England are as small as with us; if so, why should not the importer allow the corn bill to work its own cure, and not pay partial duties, for it is perfectly certain that if the importers would not pay duties, the price would rise to make the average 73s. and the duty 1s.; by this all parties would be served—the farmer would get a high price for what he has, the importer a profit for the risk of his investments. But the people would reap the larger benefits, as the price always falls a good deal after a large quantity of foreign wheat is thrown on the market. The weather still wet, with no indication of a change; the sun seems to have left us this summer, and in his place has sent St. Swithin, who has payed his visits hourly for the last four days.—*Leith, July* 21.

PLANTS OF THE PHILIPPINE ISLANDS.—In these islands are two plants which well deserve to be inquired after by persons visiting them. They are thus described by a zealous, but not scientific correspondent, who has just returned:—One is a raspberry, which is found upon the summit of the highest mountain in these islands, 7,117 feet high. The beauty of its leaves, and its large yellow fine-tasted fruit, would render it acceptable to the horticulturists of Europe. The other is a noble lily-like plant, growing in small lakes, with strong upright leaves, some of which are eighteen inches in diameter. The flower is large, with close-set petals, from four to five inches long; the lower part of the petals white, the upper a beautiful clear pink.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ST. BOSWELL'S FAIR.—This great annual market for almost every description of stock, was held on Monday last. J. Murray, Esq., of Lauder Rarnes, sold his bred lambs, ewe and wedder, at 22s. per head; the current prices for stock of the same breed, ran at 18s. to 23s.; few, if any, obtained more. Half and three-parts bred lambs, of which the market was chiefly composed, might be said to run at from 12s. to 20s. We did not observe any Cheviot lambs in the market, it being too early in the season for such stock. There were few old sheep in the fair. We saw only one lot of black-faced wedders, which were said to be sold at 21s. each. Young sheep, if fat, sold at about 5½d. per lb. Rough hogs were so very inferior, that we do not think fit to mention the prices which they obtained. There was a great attendance of wool-buyers, and although there was rather a good demand, still prices did not run very high. The best parcels of half-bred hog wool sold at from 26s. to 27s. per stone of 24lbs. Cheviot white and half-bred ewe, at from 22s. to 25s.; aid Cheviot at 14s., 15s. and 16s.; black-faced white, at 13s., 14s. and 15s. The show of cattle was only middling; those fit for the butchers sold at from 6s. 6d. to 6s. 9d. per imperial stone, of the best description, but inferior quality could be bought for less; grazing quality were less sought after than we have seen, although prices were very similiar to those obtained in neighbouring markets. Good milch cows still maintained the large prices which they have obtained in other places during the course of this summer. Draught and saddle horses sold at good prices.

EXETER LAMMAS FAIR was held on Friday, but the supply of bullocks was very small, indeed scarcely exceeding that of many of our markets. Its character, however, has been that ever pleasing one of being a selling fair; there being a good attendance of up-country dealers, whose purpose in their journey here was that of business, and it is believed all the best things have been sold. In the shew of cows and calves, there were a few superior articles, but the major part were of a medium and ordinary description. Good things of this kind are at this season pretty sure to be picked up, but, as on former occasions, so on this morning, those that are inferior are on dull sale; and the general quotation must be stated at from 9 guineas to 17*l*. For poor steers and heifers, the season is too far advanced to expect to meet a good market, and as respects these, business was very dull, while those disposed of, were at rates scarcely supporting our last market quotation. Yearlings were from 5*l*. to 6*l*. a piece.—LEATHER FAIR.—In this fair the supply is small, but it is believed all will be sold;—the quotation being—Calf Skins, 2s.; Rounded ditto, from 2s. 3d. to 2s. 3½d.; Close Butts, 16d.; English Hides, 12d. to 12½d.; Spanish Horse Hides, 18d.; Prime Shoulders, 12d.; English Horse Hides, 14d.; Bellies, 9d.; Russia Kips, 16d. to 18d. per lb.

SHERBORNE FAIR, on Monday last, was very scantily supplied with stock of every description. Beef and Mutton were in considerable request, and found ready purchasers, the former at from 10s. to 11s. per score, and the latter at from 6½d. to 7d. per lb, and nearly all sold. Good Store Wethers were also in request, and soon found customers at from 30s. to 36s. per head. Of Lambs the supply was very short, notwithstanding which, they experienced a very dull sale, and it was with difficulty purchasers could be found at from 16s. to 20s. per head, and some quantity remained unsold at those prices. The quantity of Devon Oxon and Steers was very short; what appeared sold briskly at from £15 to £20 each. The Horse Fair was also very small, and very little business done. Nothing was done in Wool; the buyers scarcely knew what to offer, and seemed desirous of postponing business till prices were more steadily fixed. On the whole, the fair was a very small one, with regard to Stock, and by no means well attended.

At BEWDLEY FAIR, on Monday, there was a good supply of sheep and lambs, which sold from 6d. to 6½d. Fat cattle were also very plentiful, which bruoght from 6d. to 6½d. Horses were more numerous than last year, and of better quality.

ALTON GREAT LAMB MARKET, held on the Butts, on Tuesday last, was very fully supplied with stock of a very superior description, which, in consequence of the prospect of an abundance of feed, were disposed of on terms satisfactory to sellers, although an entire clearance was not effected. Prices may be quoted as under:—Wethers, which appeared to be most in demand, realized from 28s. to 37s.; Ewes, of which but few were offered, 24s. to 30s.; Lambs, 22s. to 26s.; some few of the admired pens realized 30s. and upwards.

OVERTON GREAT SHEEP FAIR was held on Monday. The supply was not so numerous as at the fair this time last year; nearly the whole of the sheep were sold on very good terms. Lambs being in short supply were disposed of at from 1s. to 2s. per head higher. Mr. Eadney had the first prize for the best 100 lambs; Mr. Nation the 2d best. Prizes were also given to Mr. Digweed, Mr. Bunce, Mr. Twynham, and Mr. Budd; there were some very fine Rams and two-tooth Sheep belonging to Mr. Beckingham, strongly recommended. "The Buck Feast" will be held at the Poyntz's Arms Inn, Overton, on Tuesday next.

STOBBS MUIR FAIR was held at Dundee on Tuesday with an excellent show of grazing cattle. The whole stock shown was in first-rate condition for laying on grass and turnips at the end of the year. The above kind of stock has been selling above its value for the last twelve months, but on this occasion an abatement of fully 15 per cent. took place, with a very dull sale. Of fat cattle there was a very indifferent show, and the good were picked up at an advance of at least 3d. per stone above the prices going at the Glammis and Forfar markets.

AYLESBURY WOOL FAIR.—The fair took place on Wednesday last, and was rather more numerously attended than last year. There was a great quantity of wool, which appeared to be of very good quality, and purchasing was kept up with much spirit until two o'clock, when both buyers and sellers retired to the George Inn, where an excellent dinner was provided.—The chairman stated that Mr. Paine was the largest purchaser of wool, he having purchased 8,535 fleeces. Mr. Bartlett was the next. From the paper which he held in his hand there appeared to have been 16,989 fleeces in the fair, and the price was from 25s. to 30s. per tod. He thought Mr. Paine was entitled to the cup, and he should therefore present it to him.

ABINGDON WOOL FAIR.—This annual fair was held on Monday week. The quantity of wool brought out was equal to former years, and we noticed a full attendance of buyers, who purchased freely. The following were the prices realised: Ewe Wool, 24s. and 25s. per tod; Mixed ditto, 27s. per tod; Teg ditto, 28s., 28s. 6d., and 29s. per tod.

AYR ANNUAL WOOL FAIR.—Agreeably to advertisement, this fair was held on the afternoon of Tuesday last. The quantity of the different kinds of wool brought forward, which was principally from Galloway, was considerable; and the attendance of woolstaplers, manufacturers, and others, was numerous, including gentlemen belonging to Glascow, Kilmarnock, Stewarton, Dalry, Newton-Stewart, and Ayr. At an early period of the season, owing to the depressed state of trade in the manufacturing districts, and the gloom that in general hangs over commercial affairs, the wool markets this year were expected to "rule dull," but these anticipations have not been realized, for at the Inverness, Perth, and other recent fairs, business was transacted on a large scale, and with no small degree of spirit; and this state of matters exercised an influence over our fair, both as regarded demand and prices. As was to be supposed, bargains in certain instances were effected with some difficulty, but a considerable extent of business was done; the blackfaced mostly having changed owners, though sales of white wool were rather limited, owing to dealers wishing to force the price down to 7s. 6d., while holders stood firm for 8s. Prices for the different kinds may be quoted as follows:—Blackfaced, laid, 8s.; blackfaced, unlaid, 10s.; Cheviot, laid, unwashed, 12s. 6d.; Leicester, do., 20s.; cross Cheviot and Leicester, 24s. 6d.; mixture crosses and half-bred, 22s. 6d. A large number of sales also took place in retail at the following rates:—Cross betwixt Leicester and Cheviot, per stone of 24lbs., 21s.; white Cheviot, 19s.; blackfaced, white, 19s.; laid Cheviot, 14s.; blackfaced, laid, 9s. We may also state that there was exhibited a specimen of very beautiful fine blackfaced wool, *white* tarred, as fine as Cheviot, the property of Captain Kennedy, of Finnart, and which attracted great attention. At half-past three o'clock an ordinary took place in the Ayr Arms Inn, which was numerously attended. Provost Limond officiated as chairman, and Alex. Glover, Esq., woolstapler, discharged the duties of croupier. After the dinner, Mr. Glover first offered for Provost Limond's clip; it was sold, however, to Mr. Sloan, Ayr, and subsequently numerous other clips found purchasers. The fair upon the whole may be regarded as satisfactory; and judging from the past, we have every reason to induce us to believe that it will continue to be efficiently supported.

INVERNESS SHEEP AND WOOL FAIR.—The great annual market of the north for Sheep and Wool was held last week. Few of the dealers attended on Thursday, when the business should have commenced, and comparatively little was done till late on Friday evening; this dilatoriness is much complained of by some of the dealers from the south. It was difficult to prognosticate the complexion of the market. The murrain prevails in the flocks of the south, and this, it was feared, would operate in preventing the buyers taking large lots. Then, with respect to wool, the manufacturing districts are far from flourishing at the present time, and the Highland clips have been unusually abundant. It was, therefore, supposed that sales would not be brisk, and that prices would be low; both these predictions, we are happy to say, have been in a great measure falsified by the result. The market has been a satisfactory one, both as to prices and extent of business. For sheep there was a good sale generally, though some of the large lots remain unsold. Of the different lots we may here specify some of the most valuable. The stock of Mr. Houston, of Kintradwell, Cheviot, sold very high, the wedders 31s. and ewes 20s. Another lot from Sutherland fetched 30s. A fine lot, belonging to a gentleman in Morayshire sold at 28s. Several lots sold at 26s. and 27s. The ordinary price of Cheviot wedders was from 23s. to 26s. Cheviot ewes ran from 14s. to 20s. Mr. Houston's were sold at the latter price, and several other lots brought the same. Cheviot lambs ranged between 8s. and 10s. 6d.; but one lot from Skye sold as high as 12s. The Glentulm ewe lambs fetched 11s. 6d., the Garthbeg 11s., wedder lambs 9s. 6d., the Scalasaig lambs 9s. 6d., the Letterfinley lot, which is a large one, brought 8s. 3d. The Bighouse ewes sold at the great price of 22s.; wedders 30s. The black-faced stock found ready purchasers. The Rhudunan wedders were sold at 22s., and a good lot from Glensheal at 21s. Various lots sold from 18s. to 22s., black-faced ewes from 9s. to 11s., lambs from 6s. to 8s. The lot from Mugstat, Skye, sold at 7s. 6d.; Captain Macdonald's (Inversheal) ewe lambs at 8s. Crosses betwixt the Cheviot and black-faced fetched good prices, but we did not hear of many sales. The cross wedders from the farms in Ross-shire, of Mr. Mackenzie, of Ord., and Mr. Mackenzie, banker, here (who, it will be observed, have gained the Highland Society's prize at this market for black-faced wool), were sold at 26*l*. per clad score—a very high price. We heard of a lot, about 560, of cross and black-faced lambs, which sold at 7s. 6d. For wool the highest price obtained was given for a large lot of Cheviot washed, sold by Mr. Mitchell, Ribgill, for 16s. 9d. per stone. Part of this lot was smeared with white tar. Several lots sold at 16s. A lot of Cheviot wool, washed, black tar, consisting of about 500 stones, was purchased by Mr. White, Clova, Forfarshire, from Mr. Mundell, Inverlaal, for 15s. Black-faced wool sold at from 6s. to 7s. 6d. The prices, generally, of the market may be stated as follows:—Cheviot wedders, 23s. to 30s.; ewes, 13s. to 22s.; lambs, 8s. to 11s.; Black-faced wedders, 16s. to 22s.; ewes, 9s. to 11s.; lambs, 6s. to 8s. WOOL.—Cheviot, per stone, 15s. to 16s. 9d.; black-faced do., 6s. to 6s. 7d.

CALENDAR OF HORTICULTURE FOR AUGUST.

Kitchen Garden.—August is the month of prospective operations for the ensuing year; there is work cut out for every week, which must be critically attended to; we shall notice every item particularly, premising, that the series of directions apply most rigidly to the latitude of London, and to a degree south and north; but that, with a trifling allowance of a few days in advance for the northern counties, they will be equally available.

In the first week—say the 5th, 6th, or 7th day—for the parallel of London, sow *Cabbage-seed*—East Ham, early and London York, and Mr. Knight's beautiful Downton, if obtainable. The object is to secure time for the plants to acquire strength before the approach of cold weather. The soil need not be rich; a sound loam is sufficient; the plants ought to be moved twice, of which operation due notice will be hereafter taken; enriched earth will only be required at the final planting. Sow in drills, half an inch deep, in an open exposure; for all the varieties of the *brassicæ* dislike shade. If the weather be dry, water the drills twice, freely, before the seed is deposited.

Winter Spinach.—Dig a piece of rich ground, not however glutted with manure, but rather such as the earliest potatoes grow on; and if the loam be hazel, gritty, and given to bind, when quite dry (we write from actual experiment), scatter over the surface about half a pound of nitrate of soda to every square perch (30¼ square yards), then dig it in, and sow in drills as the work advances, each one yard from the other. With this simple dress we had fine spinach in the autumn of last year, and thence to June, with the exception of the time of actual frost; the luxuriance of the plant was surpassing and the quantity profuse. If the garden and exposure be warm, and the ground rich, the sowing may be deferred to the second week. In the course of culture, thin the plants to three-inch distances.

Carrot—within the week—the early horn is good; three or four drills in lightish sandy soil, for early spring supply.

Sow *Turnips* for a late crop, but not after the first week, and thin out the previous sowings; this is hardly a garden crop, unless the ground be very extensive; but it is well adapted to a piece taken out of an orchard or pasture, and open to the sun; bone-dust is generally a good manure.

Sow *Radish*, *Salad*, and *Lettuce*—the latter for cutting late, also for transplanting. These vegetables may be sown again about the third week; the best sorts of lettuces for winter are the green and brown cos; also the early Florence; some prefer the brown Dutch and green cabbage lettuce to be transplanted in September.

Cauliflower.—About the 21st, in a plot of good loamy soil, a yard wide, and of any required length. The ground being digged and made fine, strike shallow drills, six inches apart, and sow the seed in them; or adopt the method recommended by Abercrombie; and after raking the surface of the digged ground till level and fine, scatter the seed evenly, pat it gently with the flat of the spade, give a sufficient watering if the weather be very dry, and finally sift over it about a quarter of an inch of light earth; cover during hot sun with a mat, remove that, and water in the evening; replace the mat in the morning, and thus act till the seeds have fairly vegetated.

Transplant, at various times, most of the cabbage family:—savoys, early, two feet asunder; broccoli at like distances, previously digging-in a little decayed manure; or dig a trench, or trenches, according to the quantity of plants and extent of the plot, like those used for celery; manure the bottom, and set the broccoli two feet or 30 inches apart. If these trenches be filled up to the ground level before frost set in, every advantage will be obtained which can be expected from laying down the plants in autumn, avoiding the disturbance and trouble thereby occasioned.

Coleworts—for greens, plant in rows, at half the distances of hearting cabbage.

Celery—for the last crop, at any time prior to the 21st. If the weather be dry, water liberally, and repeat the watering every other evening till the plants cease to flag. The distance of five inches is sufficient, but we would caution every one to desist from the practice of cutting off the tops, and trimming sound roots. If the celery be stout, with stocky short roots taken from a nursery-bed, and the ground be ready, little check will be given; but every mutilation is a mischief, though if the plants be tap-rooted, raised direct from *the seed-bed*, and lacerated, it will not be amiss to cut off the damaged portions; yet the principle is a bad one, and ought to be avoided, by caution in lifting the plants, and replanting with all possible speed.

In *earthing Celery*, which ought constantly to be attended to, care must be taken to prevent the earth from entering the hearts of the plants. Some persons pass a string of bass round each; others place long rods on each side, supported by temporary stakes, so as to compress an entire row of plants, prior to earthing. Perhaps time is equally economised, or more so, by holding a plant steadily with the left hand, while with the trowel or fork the right hand moulds and adapts the light earth about it. This sort of caution is required during the first month; after which the spade may cut the sides of the trenches, and pile the earth rather openly on both sides of the rows.

Propagate, by slips, all the sweet herbs—as thyme, sage, rue, lavender, rosemary; this should be done in moist weather.

Attend to the bulbous tribe, and take up garlic, and such onions as are ripe; let them be thoroughly dried in an airy shed.

Destroy weeds; for at this season they multiply and grow rapidly, and in seeding fill the ground with rubbish. Weeds produce good vegetable manure, if heated in large masses; but in forming these, we recommend to sprinkle salt, about a handful, over every six-inch layer, and a shovel of quicklime, thus decay is hastened, and with it the destruction of seeds; the objection to weed-mould is this, that it commonly introduces a progeny of seedling weeds into the land.

FRUIT GARDEN.—Begin to prune the spur-bearing trees early. Formerly the regulation of the breast wood and laterals was begun in June, and as fresh shoots were produced with the July growth. We have seen the error of this practice, for it causes double, if not three-fold trouble, without producing any compensation. When the July shoots are completed and the wood is semi-ripe, one cutting-back will be sufficient; and as some activity remains in the trees, the lower buds near the mother branches swell, but do not push into shoots. Every useless shoot should thus be treated; and thereby abundance of good spurs may be formed on all young apple, pear, and plum-trees. The spring wood of peach and *nectarine trees* adapted to the figure of the tree, and selected for next year's bearers, ought to be accurately and neatly trained-in.

Fig-trees are very easily managed, and the fruit is deservedly a great favourite with some persons. The figs progressively ripen in this month. No shoot must be shortened, but all the young wood of this year, which alone will bear the figs of the next summer, should be trained at full length, cutting clear out the old bearing wood from which the fruit has been gathered, in order to make room for the new wood, and also removing from their origin all the projecting breastwood; this indeed ought to be done early to admit air and sun to the fruit. Young figs begin early in the month to show themselves on the green wood; and if permitted to remain, would grow to a considerable size. In the warm countries these figs would become the first of two annual crops; but as they cannot support the rigour of our occasional frosts, every such fig should now be removed on its first appearance. Others will be protruded later in the autumn, and these will remain uninjured if the trees be duly protected. By attending to this circumstance, we insure one crop of figs; and we are mainly indebted to the Rev. Mr. Swayne, for his able paper, in an early series of the London Horticultural Society; which mainly contributed to establish the practice.

Vines undergo an important change early in the month of August, which is noticed by Mr. Capper, in the sixth volume of "London's Gardener's Magazine"—a series of articles on the anatomy of the vine, commencing at page 12 of that volume. Mr. Capper may have refined too much therein; but it is manifest that a fresh layer of wood is added to the stem and main branches, while growth and extension are almost entirely arrested; the fruit begins to form its seed, and when this process is completed, those chemical changes progress in the pulp which terminate in the formation of sugar of grapes, and the simultaneous ripening of the berry and its seeds. But while growth of wood continues, all superfluous secondary shoots and tendrils should be early removed, and the proper bearing wood secured to the wall. Of late years our out-of-door grapes have suffered much; a high promise presented itself this year, but the cold weather of June has much weakened it, and grapes will not be early; the Frontignac, indeed, appears to have failed, and the berries drop off.

Budding of apricots, peaches, apples, pears, and plums, may be successfully performed in young free-working bark, during the first half of the month.

Greenhouse plants may be freely propagated by cutting—as the verbenas, calceolarias, and particularly all the varieties of pelargonium; the scarlets, by merely placing slips or cuttings in the open soil during the first week; or if later, in propagation pots of sandy loam and old leaf-mould. The *fancy varieties*, by cuttings of strong young shoots, placed singly in the smallest pots—the soil, two-year-old leaf-mould and silver sand; give water, place the pots in a hot-bed frame, where there is a gentle bottom heat. After the flowering is over, the old plants should be dried off a little to harden the wood; they should then be cut over very low, so as to leave the skeleton of a future handsome bush. From the cuttings, the best and strongest are to be selected. The mother plants are to be kept in the open air to receive the rain, till the first symptoms of growth commence, when the soil is to be shaken off, the loose straggling roots cut away, and the plants returned to the smallest pots which will receive the roots without cramping them; the soil for this first repotting should, in our opinion, be rather weaker than that used in the spring, for we do not wish to stimulate, but to preserve.

Dahlias are coming into perfection; of these we have but one new remark to offer. *Nitrate of soda* was recommended by some writer, and a friend of ours, a most successful cultivator, tried it in June, in the following manner and proportions. He dissolved half-a-pound in nine gallons of soft pond water, and distributed this quantity among about seventy plants. The verdure of foliage and strength of these dahlias is superior, and the application will be repeated. Difference of soil may effect the results, but we recommend our readers to make trial of it. This chemical, (nitrate of soda) so diluted, can do no injury, and it may prove highly beneficial.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF JULY.

During nearly the whole of the last month, the wheat trade was in a more than usually stagnant state throughout the United Kingdom. The supplies have not exceeded the consumption, and although the farmers' deliveries have been even less than is generally the case at this season of the year, still any deficiency which may have existed in this source throughout all the large markets of consumption, has been amply supplied by the holders of foreign wheat previously entered for home consumption; of which the sales latterly have been so very considerable, as to have reduced the stock of this description to within fifty thousand quarters, at the period when our present number of the "Farmers' Magazine" goes to press. The state of commerce generally, and of the corn trade in particular, has, *for a time*, prevented the proprietors of bonded foreign wheat from attempting any undue reduction in the present rates of duty, with the view of entering their property for home consumption; nor is it probable that any reduction in the rates of duty at present payable on the entry of foreign wheat to any extent can occur, unless it be occasioned by a very material alteration in the state of the weather, which till lately, with a few exceptions, has been as propitious to the coming crops as the best friends to the general prosperity of the inhabitants of the United Kingdom could have desired; and, should it only now be dry and favourable till the present harvest be secured, the Empire must flourish in a degree heretofore seldom experienced, even in the best of times. It will in a most satisfactory manner settle the great question of our independence of foreign nations for annual supplies of food, and it will most abundantly show how numerous the advantages are which the industry of the empire must always reap from the grain and pulse crops grown at home being rendered even more than sufficient for the consumption of the whole of the population. It will reduce the prices of all the necessaries of life, without in the slightest degree injuring the property of the farmer, for he will gain more by quantity than he can lose by its depreciated value; and it must from necessity increase the quantity of labour to be performed, and consequently enhance the value of wages payable for its performance. Instead of in this season paying away many millions sterling to foreign nations for foreign food, imported into this empire for the support of an unemployed and consequently starving population, this money, should the harvest prove good, will be distributed amongst our agricultural proprietors and farmers at home, and will by them be kept in circulation amongst the manufacturing classes, and indeed amongst all the productive labourers throughout the empire—making all in the meantime happy and contented, and finally returning into the pockets of its original proprietors, with more than compound interest added to the principal. To the commercial classes no increase in the present amount of our foreign commerce which an absolutely free corn trade can by any possibility create, could in any manner make amends for the loss in the amount of the home trade which a bad crop this season would occasion to them. Indeed we have repeatedly had opportunities to state that a barter trade in foreign grain and British manufactured goods never yet did exist, and never can.

To the serfs in Poland, and the boors in various corn districts in Germany, it matters nothing whether the grain crops, by whose labour they are sown and gathered, be abundant or the contrary; whether they find a favourable market for the consumption of their surplus growth in Great Britain, or whether it be entirely prohibited by our corn laws. To them the one case does no good, nor does the other alternative do one particle of harm. A large corn exportation adds not to their wealth, nor can a small exportation by any possibility increase their poverty. Should Great Britain remit to the continent millions sterling annually in payment for foreign grain, this immense sum would not enable the cultivators of foreign fields to increase their present consumption of manufactured goods. The money would be employed by the large land proprietors in an increased consumption of French wines, and of many descriptions of Italian and southern luxuries, and perhaps it might in part be expended in additions to their already princely palaces, and in other home enjoyments; but to the great body of the people it would not bring one solitary advantage, nor would it enable any part of them to improve, either by clothing or by food, their present very humble condition in life. The circulation in this empire, however, of these many millions must eventually confer the greatest benefits on every class in British society. There is no man so low here who receives not wages for his labour, and these wages are always regulated by the quantity of labour to be performed. Unlike the Polish slave, he receives not a scanty allowance of food for the work which he performs, but he is remunerated by daily wages, paid to him in the current coin of the realm, and he supplies himself with those necessaries of life which add to his respectability and comfort. The truck system of payment has most properly been prohibited by law, and the workmen consequently have universally an interest in the general prosperity of all, let their rank in society be high or let it be low. The more prosperous their neighbours may be, the greater must be the demand for their labour, and the more liberal must be the rates of their wages. These facts the great majority of the productive classes are perfectly aware of, and no attempted excitement on the subject of the price of bread can alter opinions, of which their own experience in social life has fully established the truth to them. Dearness and cheapness, they know, are entirely relative terms, depending as they do on the means of employment. Bread at twopence per pound in London is cheaper than the same weight is in Paris at one penny ; because here labour is at least two-thirds higher than it is in the capital of France. Our working and productive classes are perfectly convinced of this great truth, and desire not any reduction in the value of the necessaries of life, which is not the effect of a superabundance in the home growth of all these necessaries, because in the latter case alone can moderate prices for provisions not reduce the rates of their daily pay ; indeed almost universally an abundant home crop is attended by an improvement in the means of living. The certain consequence of an abundant crop is an abundance of money, and low rates of interest to those who obtain loans from capitalists, and who have the means of productively employing it in private and public undertakings. But the greatest benefit which a large growth of grain at home can confer on any community, may be found in the steadiness which it gives to the prices of every article of consumption, whether it be of home or foreign origin. The circulating medium remains in a most healthy state, and cannot, under the influence of the existing corn laws, ever be transmitted abroad in exchange for foreign agricultural produce, unless when the elements cause bad and deficient crops in this country. An unnatural scarcity of money is attended by an unnatural and destructive decline in the prices of all articles of general use. The wages of labour are, under such circumstances, more than proportionably reduced ; and an extensive importation of foreign grain is the sure precursor of a scarcity of money, and consequently of restricting the means for giving productive labour to the people. From present appearances, a considerable amount of pecuniary distress is gradually gaining ground in various departments of commerce, which can have no other origin than in the subtraction from the circulating medium, during the last three years, of from six to eight millions sterling of hard money in payment for foreign grain, the importation of which had been rendered necessary by the previous succession of bad crops. If, however, the empire be allowed to reap the benefits of the present corn laws for another season or two, the crop of 1840, and, in every probability, that of the present year, will soon afterwards remove many of the difficulties under which commerce at the present moment labours, and relieve her from others with which she is now threatened, and which must fall on her with a violence at this moment not even contemplated, should the legislature abrogate any of those wholesome laws which have been enacted for the protection of the interests of all classes in society, whether they be employed in agricultural or in commercial pursuits, and by which the wages of labour themselves are rendered generally more than equal to the common expenditure of life. Should, we repeat, the weather hereafter be dry, warm, and favourable for ripening and securing the crops now in the fields, that of wheat will be both abundant in quantity and of tolerably good quality, and it will afford most ample evidence of the rapid progress which is now making in the science of agriculture, the result of which must shortly be attended by consequences of the deepest importance to the entire population. A bad harvest season, on the contrary, or a repeal of the existing corn laws, which may be called one and the same thing, must produce a general calamity. It will subtract from the circulation the whole of the metallic currency, by which the value of all articles of use and luxury is now regulated, and it must place a great majority of the industrious on half employment, and that half paid by wages reduced more in proportion than the labour itself will be. It is a strange plan for affording productive labour to what is called falsely a superabundant population, to transfer to foreign slaves and boors the cultivation of grain for our use, from our own field labourers, and to pay foreign land proprietors some millions of specie annually for the use of their fields. This plan, however, still becomes more strange, when we reflect on the almost boundless resources for the production of grain of all descriptions which we possess within the United Kingdom, and on the energy and industry of the agricultural population. It is perfectly ascertained that nearly fifty millions of acres of land are at present under cultivation, the great majority of which we freely admit to be as yet in a very imperfect state of tillage, but which is in a gradual state of improvement, and under the influence of the corn laws must, before long, not only produce in great abundance all the necessaries of life for the support of our population, but eventually also may enable us to supply our colonies, and various independent states in southern climates, with the surplus of our production. There is not one acre of land within the empire, however high may be its present state of cultivation, which is not capable of still farther improvement ; nor is there one acre amongst the fifty millions now cultivated, which is so poor as to be unworthy of capital being expended on it. The anti-corn law lecturers can never persuade the inhabitants of England that their interest can be promoted by throwing two millions of acres of land, now producing wheat, out of cultivation, and by the substitution of foreign wheat in the stead of this wheat. In the latter case, money must be remitted to foreign land proprietors for their crops, which by no possibility can be drawn back into this country by any increase in our commerce with those states from which the supplies of grain may be received ; and the means to furnish the people with productive labour would be thus reduced proportionably with the reduction which the transmission of specie to the continent for these purposes, would cause in the amount of the circulating medium in this country. On the contrary, when our crop is sufficiently large for the wants of the community, wages are raised, because the means of employing the people are increased by our home corn growers receiving payment for the home consumption of food, and expending it amongst the manufacturers, artisans, and other productive classes of society. In an abundant crop therefore the whole of the people are deeply interested, and the weather alone can deprive them of this most important advantage during the next corn season, at all events. The fields, at the time we go to press, are loaded with abundance, but the weather is by far too wet for ripening and bringing grain to perfection. Already there exists some uneasiness respecting our future prospects, and wheat advanced from 5s. to 8s. per quarter before the end of last month. No material injury has however as yet been committed, in as far as observations are made, and a favourable alteration in the weather will speedily remove those fears which, naturally enough, now exist respecting futurity. A bad crop would be attended by the worst of consequences, and the commercial community would suffer much more severely by such a calamity than the agricultural interest could do; for it would place at least one-half of the people out of employment, reduce the public revenue, and add to that state of general distress now almost daily becoming more visible.

In the Barley trade very little business was done during the beginning of the last month, nor did any alteration in prices occur until the conclusion of July, when an improvement of 1s. to 2s. per qr. was occasioned by the state of the weather. The rains which fell in June and in the beginning of July had a most favourable influence, however, on the young barley plants growing in the light soils, and they at the present moment promise well, provided that the weather hereafter be dry and warm—a change which is now absolutely necessary for bringing the crops generally to a prosperous conclusion. For the quantity of land under this description of tillage, there is the greatest prospect of an abundant produce; but it must be a matter of deep regret to all who desire the public prosperity, that encouragement is not given to the conversion of three times more land than is now under this description of cultivation into Barley fields; for consumption may be abundantly found for three times the quantity of barley grown under the present, we had almost said, system of wicked and anti-human barley taxation. In Great Britain and Ireland there are, we may say, millions of acres of light and sandy soils which are admirably calculated for the growth of the best qualities of malting barley, but which are not suited to any other description of agricultural undertaking. If due encouragement were given to the consumption of barley, an important addition would be made to the wealth of many of the land proprietors, and many of the existing deprivations of the lower orders in the community also would thereby be removed, without in any manner subtracting from the national wealth; but on the contrary it would be very materially increased, did a material reduction take place in the present rates of duty charged generally on malt, and on spirits manufactured and rectified in England. The heavy duty imposed on the conversion of barley into malt, has latterly reduced the consumption of malt by the common brewers to rather less than four millions of quarters, the thirty millions of human beings now existing in the United Kingdom, not having the means to pay for the consumption of a greater quantity. The real truth of the case is, that one half of the people cannot afford to use beer at all, and the other half are compelled to drink it in an adulterated state. The numerous convictions now taking place weekly, at the suit of the officers of excise, perfectly establish this fact; and thus the beer consumers are defrauded of their just right to consume pure beer alone, and their healths are likewise placed at hazard by the impurity of the drugs, with which their beverage is but too frequently impregnated. At an excise charge of one shilling on each bushel of malt manufactured, the revenue itself would be improved very materially, and eventually it would triple the present quantity of barley now converted into beer. The quality of the beer would be proportionably improved, and the entire population would enjoy the important benefit which the legislature has the power abundantly within its reach of bestowing, by sanctioning this alteration in the malt duties. Little less than two millions of acres of land would be required for the production of barley in addition to the quantity now under this description of tillage, was the present excise system modified; and a great part of this increase would be taken from light and sandy soils, at the present moment nearly useless to human nature. The cultivation of this additional number of acres, would give employment to many thousands of agricultural families who are now nearly in a state of destitution; and to many small farmers, who, with their capital, must seek employment for themselves, their families, and of their property in the wilds of Canada, or in the back settlements of the United States of America, should the present barley taxation system be suffered to continue for any length of time in the British Empire. With such an extensive field for the profitable employment of the people at home, as even the barley trade alone places before the legislature, it is perfectly unintelligible wherefore emigration should be thought of until, at all events, this source of livelihood be in some measure exhausted—for this would be one of the many advantages which the reduction of the malt duty would confer on the community at large; and the increased wealth which this increased barley tillage would create, would do far more than pay for the increased expenditure which this additional consumption of barley would render necessary. In this quarter, there is a wide channel for scattering universal good amongst the great mass of the people—for raising to comfort and independence many families from the most abject state of distress and destitution—and for spreading happiness and contentment amongst millions. It may largely add to the revenue, without adding in the slightest degree to the public burdens; and by a reduction in the malt duty to this extent, the value of land itself will be most materially improved by the improvement which it naturally must be the means of creating in the culture of barley itself. To render the mode of collecting the malt duty more simple than it is at present, would materially decrease the sum now expended in its collection, and would likewise improve the quality of malt itself. To charge the duty on the raw material, and to permit the maltster to use his science and his judgment in its manufacture, would be attended with considerable advantage; for, as the law of malting now is, the same hours only are allowed in the different gradations of malting, whether the barley be grown in a northern or southern climate, whether it be soft or flinty, whether it be thin or the contrary in the skin, and whether the weather at the time of malting be warm or cold. Now the same amount of malt duty might be paid into the treasury, without these vexatious excise restrictions; and generally a much superior quality in the malt itself would be obtained, if the maltster was permitted to manufacture his property in that manner which suited best his own interests and the interests of its consumers, and if the duty was charged at once on the barley itself when it is taken into the malthouse. An act of parliament for the reduction of the malt duty, and for rendering the excise regulations less stringent than they are at present, to take effect within two or three years after it had passed the legislature, would improve, we repeat, the revenue—would immensely increase the consumption of barley—and would enable the entire population, to a certain extent, to enjoy the moderate use of that favourite and wholesome beverage *beer;* and this alteration in the present defective system could not, by any possibility, do injury to any interest, or to any individual in the community. There is still however another channel wherein the consumption of barley may be increased by half a million of quarters; and that is, in suppressing the most profitable but demoralizing trade of the smuggler of foreign spirits into the British Empire, for the consumption of the British people. There is scarcely one crime committed which has not its origin either remotely or immediately in this cause. On this foundation, the great and extreme vices of tee-totalism and drunkenness rear their deformed and hideous heads, and it enables their followers slowly, but surely, to gain ground against the great virtue of temperance. Excessive spirit taxation is the cause of these evils—we mean the heavy manner in which barley is taxed when converted into spirits in England alone; for in Scotland and Ireland moderate spirit duties have suppressed smuggling, by rendering the trade unprofitable. In England, not less than ten millions of gallons of foreign spirits are annually consumed, which are manufactured from produce of foreign growth, which pay no duty whatever towards the public expenditure of the British Empire, and which corrupt the morals of all connected with its importation, and employed in its sale. The charge of three hundred and fifty per cent. of duty in England on home-made spirits, naturally holds out the strongest inducements for the violation of the laws of excise, and encourages the nefarious trade of the illegal importers of foreign spirits: sacrificing at the same time, and by the same acts, the public revenue, and what is far worse—the public morality. The reduction of the spirit duty in England to one half of the present charge, will effectually cure the evil of smuggling, and increase the great virtue of temperance, at the expence of its two extreme vices—drunkenness and tee-totalism. It will restore to a healthy state that great and important branch of our internal commerce—the distilleries; and it will increase very considerably the consumption of home-grown grain. It will likewise add to the sum at present paid into the treasury annually, for duties collected on home-made spirits; and it will wonderfully improve the broken constitutions of the drunkard and of the tee-totaller, by leading them into the moderate enjoyment of all the necessaries, and of some of the luxuries of life, with which Providence may furnish them. Smuggling has within a few years so rapidly increased in England, that the distillery trade has been very much depressed indeed, and is annually becoming worse. At many of the rich and long established distilleries, it has been found necessary entirely to stop working; and, unless measures be immediately taken to alter the excise duties in England, and the restrictions now so uselessly and vexatiously imposed on the British rectifier, the consumption of home-made spirits in England must yearly become less, and the treasury eventually must be deprived of its greatest source of revenue. The landed interest surely will pay attention to a subject in which they have so large a stake, and, by their timely interposition in Parliament, cause those alterations to be made in the home spirit trade, which are so necessary to the prosperity and happiness of every class in British society. To remove the very absurd and perfectly uncalled-for restrictions under which the British rectifier of neutral spirits into British gin, brandies, and compounds, is placed, must speedily cause the consumption of British rectified spirits to be much increased, chiefly at the expence of the foreign smuggling trade; for, even already, it is perfectly established that British brandy can be manufactured, equal in flavour and certainly superior in quality, to the best descriptions of brandies legally imported from France, were a few alterations only made in the excise regulations, by which the operations of the rectifier are very materially cramped, and his science much interrupted. Foreign spirits of all descriptions, Colonial rums, and Scotch and Irish whiskey, are permitted into general consumption at those strengths which are most suitable to the interests of the spirit merchants, and to the palates of the consumers; whilst British rectified spirits cannot be manufactured by law, unless they be seventeen or more under proof. This is a great act of injustice, and is extremely detrimental to the rectifier, particularly of British brandy, preventing him, as it does, from extracting that high flavour from his article, which under different circumstances he is perfectly capable of producing, and which, added to its superior wholesomeness, would, as we have already said, render his spirits preferable, in every good quality, to any legally imported, even from the south of France itself. At the extensive British brandy distillery in King Street, Snow-hill, Mr. Dunlop has science and knowledge of his profession, perfectly sufficient for the production of a rectified spirit, even of higher flavour than he now manufactures, did the law only permit him to make use of those strengths which are necessary to the perfection of his operations; and an alteration in the law in this respect, would eventually—as the use of Irish and Scotch whiskey has nearly banished the smuggling trade from these portions of the British empire—supersede the consumption of foreign brandy in England, by the substitution of excellent brandies, manufactured at home out of English barley, in its stead. In the mean time the smuggler drives a most profitable trade at the expence of the British agricultural interest, and of the British distillers and rectifiers. He delivers at the private houses of British consumers, brandies, distilled in the worst manner, and extracted from wine-lees and the most inferior descriptions of fruit, at and even under 15s. per proof gallon, leaving himself thereon enormous profits—so large, indeed, that the capture of every second shipment made to him, would place no effectual bar to the prosecution of this illegal system of commerce. It is in every way unjust to the revenue, to the distiller and rectifier, and to the inhabitants of England, that this traffic should be permitted any longer to continue. The preventive service, costing annually little under one million sterling, cannot prevent smuggling, nor in any material degree limit the present extent of it. The reduction of the duty now chargeable in England as home-made spirits, and an alteration in the excise restrictions on the operations of the rectifier, can alone put an effectual stop to smuggling, and render the expence of the preventive service at least one half less than it is under the present most imperfect system of excise. So long as the distillery trade remains in a state of depression, so long must the barley trade be proportionally depressed, for it materially interferes with its consumption. The state of the weather has, no doubt, in the mean time caused a small improvement in the state of the barley trade, but an advance cannot reach any material extent until a more accurate estimate can be formed of the coming barley crop. Appearances, as yet, no doubt, are favourable, but dry and warm weather is now absolutely necessary for securing this crop in good condition.

The transactions in the oat trade during the month which has just been brought to its conclusion, have attracted very little of the public attention, nor has any variation of much importance occurred in their value since our last number was published. Under the protection of the corn laws, Ireland has enjoyed the advantages naturally arising out of the supply of a great part of the consumption of this article in the various markets in Great Britain; and the people generally are consequently receiving the benefit of the retention within the empire of a considerable amount of specie, which, did the corn laws not exist, would have been remitted to the north of Europe in payment for supplies of various descriptions of grain, importable from thence at a much cheaper rate under foreign flags than they could have been from Ireland in British shipping. The abrogation of the corn laws, or the imposition on the importation of foreign oats of the trifling duty at present proposed by her Majesty's Ministers, must not only put an end to any further agricultural improvements in the sister island, but must likewise cause large districts of land there, now producing oats, to be thrown entirely out of cultivation; for it will be much cheaper to receive the oat supply for the eastern coast of England from Bremen, Emden, Leer, or any of the Danish ports, than it can be imported into London, or into any place betwixt the Lands-end and Newcastle, from Ireland or from many places even in Scotland itself. The coasting trade would suffer most materially by the alteration in the corn trade, which the repeal or the proposed modification of the corn laws would occasion to a certainty; and it is in this channel that a great portion of the hardy seamen of England are reared. In Ireland, for some time past, want of employment at home has been an almost universal complaint amongst the Irish labourers; and yet this want of internal employment must be largely increased, should the Ministers of the Crown persevere in their delusion respecting the Utopian blessings to be derived from any material relaxation in the existing system of protection which agriculture, labour, and wages receive from the beneficent corn laws. Emigration to the colonies, and all its frightful consequences, must be immensely increased, and so likewise must be wretchedness and penury amongst the already far too wretched and poor population. To encourage the cultivation of the banks of the Shannon, and of many other rivers, and to employ the people in the drainage of various morasses and lochs, several millions of acres of most excellent cropping land may be reclaimed from the waters, and, useless as they are at the present moment, may in some future period be rendered instrumental in supporting double the population which Ireland at present contains. The anti-corn-law advocates are so perfectly persuaded of the successful progress which agriculture is now making in Ireland, and are so convinced that this fact is a triumphal refutation of all their corn theories, that they now find it necessary for the success of their cause, to assert that Ireland cannot produce wheat of fine quality, because of the humidity of her climate—an assertion which experience and facts entirely refute, and which is so perfectly absurd, that we only mention it to shew the lengths to which the paid agents of many of the cotton would-be lords are prepared to go, to obtain the great object of their ambition. To them may well be applied the complimentary lines addressed to a rather celebrated personage in former times—

> "But greater far his merit, who, to gain
> A golden fame, would such a task sustain;
> Would wade through ways obscene, his honour bend,
> And shock his nature to obtain his end."

Many manufacturers have already added the enviable title of L. S. D. to their names, but with this they are not satisfied, nor will they be contented until they acquire the character of having obtained one million sterling at least by their commercial operations; and when in possession of this money, it is not entirely impossible but that afterwards they may aim at the possession of the fields themselves. In the mean time the oat crop has undoubtedly a favourable appearance every where, but more particularly in Ireland. Too much rain, however, fell last month, particularly towards the middle of it, causing an advance of about one shilling per quarter; and only dry weather until the harvest be secured can render the quality even moderately fine, or the quantity large, of the ensuing oat crop, throughout the United Kingdom. Should foreign importation not be rendered necessary by a bad crop, nor permitted by an error in legislation, the operative labourers and artisans have a most favourable prospect in view; but they must be severe sufferers should the contrary be the fact. This we venture to affirm without any fear of contradiction.

Through the medium of steam navigation, the receipt of letters and of advices from all parts of the Continent of Europe in London, is now nearly as certain as is the arrival of the mail from Edinburgh. This accuracy in the delivery of intelligence has, in a certain degree, assimilated the corn trade betwixt England and the corn shipping ports on the Continent, to the trade betwixt Norfolk and any of the large markets of consumption in Great Britain. Every Hamburg mail now brings offers of wheat to our millers from that city, and from all the ports within and without the Baltic sea, subject to the British millers' acceptance or refusal of these offers of wheat by return of post. This radical change in the manner of transacting the foreign grain trade, brings the prices abroad and here more on a level even than they previously had been, and renders the state of demand and of prices in Mark Lane the most fitting standard for fixing the value of grain abroad. Mark Lane, during the last half century, has regulated all the markets in the north of Europe, and a decline or improvement here in value has universally been attended by corresponding consequences in all the large corn markets in Europe, unless when our protective duties rendered the trade impracticable. Mr. McCulloch, who writes much on this subject in his last pamphlet, takes a most incorrect view of the foreign corn trade since the year 1810; and we must be permitted to express our surprise that, in his last address to the electors of Tamworth, Sir Robert Peel adopts these sentiments, so perfectly at variance with facts. In the pamphlet to which we have now alluded, it is asserted that since 1820, the average price of wheat in the United Kingdom was 30s. per qr. cheaper than was the average of the ten years preceding 1820. We however say, that in actual value there was very little alteration indeed. It did not suit the purposes of Professor McCulloch, nor of Sir Robert Peel, to allude to the cause of the apparent difference betwixt 86s. 3d. in the ten years preceding 1820, and 56s. 11½d. since that year. Neither of these gentlemen could have forgotten that, in 1819, the Metallic Currency Bill passed the Legislature, to come into operation three years afterwards, and which was afterwards postponed for three years more; nor could its fatal consequences in 1821 and 1822 to the farming interest, have entirely escaped from their memories. The change from a paper to a metallic circulation was equal to at least thirty-five per cent. on property generally, and three-fourths of the farmers were positively defrauded of the capital embarked in their farms by this financial operation. 57s. per quarter in gold is actually dearer than 86s. 3d. was in paper money; and let the corn trade only be made actually free, or a fixed duty be charged on the importations of foreign grain, the foreign importations will be excessive, whether our price of wheat be 86s. 3d., 57s., or 37s. per qr.; for prices of grain abroad will then always be lower than London prices, by the expences necessary to its transport from the one port to the other. 37s. per qr. in Mark Lane will, duty free, make the price in Dantzig about 30s., and with a duty charged here of 8s. on wheat, will reduce it to 28s. per qr., even at which price, under such circumstances, great abundance will be forwarded to all our large markets of consumption. The Polish serfs can raise it to leave excellent profits to their masters, even at the lowest rates which we have mentioned above; but we trust that Englishmen will never prefer Polish wheat, produced by slave labour, to British grown wheat, in which every grade of the agriculturist is so deeply interested, and by the prosperity of whom the wages of labour are regulated in every department of trade and commerce. By the latest advices received from the continent, a very general expectation is expressed that before another year can pass away, some important alteration will be made in our corn laws, for the encouragement of foreign agriculture; but still as our existing rates of duty at the moment prohibited any corn intercourse with this country, little business was transacted, and prices remained nearly nominally the same as they were in the month of June. As little chance existed at these dates of any immediate supply of foreign grain being required in Great Britain, the shipments then making were not so large, though still considerable, as they previously expected; nor, unless the state of the weather should blight the crops, expectations were entertained of a wheat demand rising up in that quarter during the autumnal months, and of a considerable exchange of wheat for gold taking place before the Baltic sea was closed against navigation by the winter months. A few weeks now are only necessary to decide the fate of the coming grain crops throughout Europe. Everywhere, with the exception of France and the Peninsula, appearances continued favourable, and much good promise existed of abundance of all the necessaries of life—rewarding the labours of the agriculturist. But dry and warm weather hereafter, is absolutely necessary to the ripening and gathering of the grain crops every where on the continent of Europe, and that too much rain had fallen is universally complained of by the foreign correspondents of the English cornfactors.

From the United States of America, the advices are dated in the second week of last month. The corn trade then remained in its previous depressed state. A considerable quantity of the last wheat crop remained unsold, and the prospects of the coming crop were favourable. Money however continued to be scarce, and credit could scarcely be said to have any existence at all. In their agricultural pursuits, however, the Union possessed wealth far more valuable than either gold or credit ever can be to any nation, and strenuous efforts continued to be made in cultivating wheat with a view to the internal supply, and also with reference to foreign markets. Mr. M'Culloch, in his last pamphlet in favour of the repeal of our corn laws, says that wheat is yearly less cultivated in the United States; but he mentions not the grounds from which he draws this conclusion. It is not in accordance with the sentiments delivered to the Congress in the last speech delivered by the President Van Buren, who congratulated all the citizens on the rapid progress which was making in the growth of wheat and other descriptions of agricultural produce; asserting that agricultural prosperity was far superior to any community than that of commerce ever could be. At a commercial meeting in Manchester also, another American gentleman, who ought to know the state of his own country, assured the manufacturers of Great Britain, that his country would annually send to the United Kingdom, if our laws would only sanction it, wheat and flour to the value of forty millions of dollars. Our learned political economist may however be right, and the American president may be wrong in estimating the progress making in agriculture throughout the American Union. Mr. Webster is however a celebrated American agriculturist, and his opinion, as expressed at Manchester, is worth the serious attention of the British people.

CURRENCY PER IMP. MEASURE.

July 26.

	Per Qr.		Per Qr.
Wheat, Essex and Kent, red ..	65 68	White 68	72 76
Irish	54 56	Do.	60 62
Old, red	66 70	Do.	70 72
Rye, old	34 36	New....	36 38
Barley, Grinding 29 30 Malting	36 38	Chevalier	— 38
Irish..................	27 28	Bere ...	25 28
Malt, Suffolk and Norfolk	54 56	Brown..	48 50
Kingston and Ware	58 60	Chevalier	58 60
Oats, Yorksh. & Lincolnsh., feed	26 27	Potato ..	27 28
Youghall and Cork black	23 24	Cork, white	22 24
Dublin 20	21 22	Westport 23	24 25
Waterford, white 18	20 23	Black ..	23 24
Newry	25 26		
Galway 15	17 20		
Scotch feed	26 27	Potato 26	27 29
Clonmel	23 26	Limerick 23	25 27
Londonderry	22 23	Sligo ..	23 24
Beans, Tick, new..............	36 38	Old	— —
Peas, Grey....................	36 38	Maple..	36 38
White	35 36	Boilers .	38 40

Seed, Rape...... 36*l.* 40*l.* Irish..32*l.* 34*l.* per last.
Linseed........ 48 56
English Red Clover, fine, 60 70 per cwt.
White........ 56 64
Mustard, White 16 — brown 18 10 per bush.
Tares, old 36 40
Flour, Town-made 60 — Suffolk 48 50 pr sk. of 280 lbs.
Stockton and Norfolk, 46 48

FOREIGN GRAIN AND FLOUR IN BOND.

Wheat, Dantzic	54 60		
Hamburg	50 54		
Rostock	54 56		
Barley	18 21		
Oats, Brew...................19	22 24	Feed...	14 16
Beans	22 24		
Peas..........................	26 —		
Flour, American, per brl......	27 —	Baltic ..	25 —

COMPARATIVE PRICES OF GRAIN.

Weekly Averages by the Imp. Quarter, from the Gazette, of Friday last, July 23rd, 1841.

	s.	d.
Wheat	64	11
Barley	32	6
Oats	22	4
Rye...............	35	2
Beans..............	39	5
Peas	44	8

Averages from the corresponding Gazette in the last year, Friday, July 24th, 1840.

	s.	d.
Wheat	71	4
Barley	32	8
Oats	28	10
Rye...............	36	8
Beans..............	45	11
Peas	45	6

IMPERIAL AVERAGES.

Week ending	Wheat.	Barley.	Oats.	Rye.	Beans.	Peas.
June 11th ..	62 2	30 2	22 2	32 9	37 4	39 2
18th ..	62 5	30 10	21 10	36 10	38 7	38 3
25th ..	63 5	31 6	21 11	35 9	38 0	37 11
July 2nd ..	63 11	31 11	22 1	35 6	39 3	40 11
9th ..	64 3	31 9	22 2	33 5	38 3	42 4
16th ..	64 11	32 6	22 4	35 2	39 5	44 8
Aggregate Average of the six weeks which regulates the duty........	63 6	31 5	22 1	34 11	38 6	40 6
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	23 8	15 4	13 9	18 3	12 6	9 6
Do. on grain from British possessions out of Europe............	5 0	0 6	2 0	3 0	0 6	0 6

PRICES OF SEEDS.

JULY 26.

There was scarcely any thing doing in Canary Seed, and quotations must be regarded as nearly nominal. Of new Rapeseed there were several samples offering, and some business was done at 40*l.* per last. The new Carraway seed on sale was of better quality than that exhibited last week, and 48s. to 50s. per qr. was pretty currently given for the best samples. In other articles no change occurred.

Linseed, English, sowing	54	59				
Baltic	—	—	crushing	48	54	per qr.
Mediter. & Odessa	50	54				
Hempseed, small........	40	45	large ..	48	50	
Coriander..............	10	16	old....	16	18	per cwt.
Mustard, brown, new ..	12	16	white..	11	13	pr. bush.
Trefoil	16	28				
Rapeseed, English new..	38*l.*	40*l.*				
Rye Grass, English......	30	42	Scotch	18	40	
Tares, winter	—	—	Spring	4	5	
Large, foreign....	—	—				
Clover, English, red	—	—	white	—	—	per cwt.
Flemish..........	—	—	do..	—	—	nominal.
New Hamburgh ..	—	—	do..	—	—	
Old do.	—	—	do..	—	—	
French	—	—	do..	—	—	
Canary, new............	100	110	extra	115	120	
Carraway, old	50	54	new	47	48	50

PRICES OF HOPS.

BOROUGH, July 26.

From East Kent, Mid. Kent, the Weald of Kent, Sussex, Farnham, Worcester, and in fact all the leading districts, very favourable accounts continue to be received, respecting the state of the plantations. The bines are represented to wear a sound healthy look, and the burr begins to show itself promisingly; all this makes the market dull. The estimate of the duty is 160,000*l.* to 165,000*l.* for the whole country, and 20,000*l.* for Worcester alone.

	East Kent.	Mid. Kent.	Weald of Kent.	Sussex.	Farnham.
	s. s.	s. s.	s. s.	s. s.	s.
Bags, 1836	45 to 65	45 to 65	45 to 56	— to —	—
Pocks. 1836	45 .. 75	45 .. 75	45 .. 65	45 .. 63	—
Bags 1837	none	none	none	none	—
Pocks. 1837	—	—	—	—	—
Bags 1838	80 .. 105	80 .. 105	75 .. 85	—	—
Pocks. 1838	85 .. 105	85 .. 105	80 .. 100	—	—
Bags 1839	110 .. 150	110 .. 150	—	—	—
Pocks. 1839	140 .. 180	140 .. 190	110 .. 150	105 .. 130	240, 300
Bags 1840	140 .. 300	135 .. 290	—	—	—
Pocks. 1840	140 .. 320	140 .. 320	115 .. 190	110 .. 170	290, 355 to 450

WOOL MARKETS.

BRITISH.

JULY 26.

	s.	d.		s.	d.
Down Teggs	1	0	to	1	1
Half-bred Hogs	1	0		1	0½
Ewes and Wethers	0	9		0	10
Flannel do......................	0	9		1	1
Blanket Wool	0	5		0	8
Skin. Combing..................	0	11		1	0½

EXETER.—With respect to Yolk Wool, we have no alteration to report—there is little doing in this article, and the quotation is 7½d. per lb. In washed wools there has been some business done, but this by submitting to further decline; and accordingly we quote Knott Wool, at 10d.; Dorset Horn, 11d.; and Marsh Wool, 11d. per lb. In sorts no further depreciation in price has taken place, and although it is not in our power to speak of briskness, yet still there seems more steadiness in the trade. The quotation is therefore—for Fell Wools—Short Coarse, from 6d. to 7d.; Broad Head, 7¼d. to 8d.; Kent Head, 8½d. to 9d.; Fine Head and Lamb, 9¾d. to 10d.; Short Fell Combing, 9¾d. to 10d.; Old Skin Combing, 10½d. to 11¼d. per lb.—Fleece Wools—Short Coarse, from 6¼d. to 7d.; Red and Pinions, from 8¼d. to 8¾d.; Green, 9d. to 9¾d.; Cornish Stripe, 11d. to 11¾d.; North Devon Stripe, 11½d. to 12d. per lb. Tops, 14d. to 14¾d.; Matching Tops, 15½d. to 16d.; Superior, ditto, from 18d. to 20½d. per lb.

LIVERPOOL, JULY 24.

SCOTCH.—There continues to be but a limited demand for Laid Highland Wool. There has been little business done in this class at the fairs in the north, as the farmers are asking an advance on last year's prices, which cannot be given, as the spinners can do better with low English wethers, which are 10 per cent. lower than this period last year. There is nothing doing in either crossed or Cheviot Wool.

	s.	d.		s.	d.
Laid Highland Wool, per 24 lbs..	7	9	to	8	6
White do. do............	00	0		00	0
Laid Crossed do..unwashed..	8	6		9	0
Do. washed do..............	9	0		10	3
Do. Cheviot unwashed do.	8	6		10	0
Do. washed	13	0		15	0
Cheviot white, washed..........	18	0		20	0

FOREIGN.

CITY, July 26.—From the manufacturing districts the accounts within the last three days have been rather more satisfactory, and the demand for the raw staple in the metropolitan market has, consequently, been tolerably well maintained.

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

Bone-dust, 21s. 6d. per qr. of 8 bushels
Half-inch ditto, 21s. per qr. do.
Rape-dust, 7*l.* 0s. per ton.
Rags, 4*l.* to 4*l.* 10s. per ton.
Graves, 5*l.* to 5*l.* 10s. per ton.
Gypsum, 38s. per ton.
Salt, 2*l.* 5s. dirty, 2*l.* 15s. clean, per ton.
Lance's Carbon, 12s. 0d. per qr.
,, Humus, 14s. 0d. ,,
Soap ashes, 10s. per ton.
Artificial Manure, 12s. per qr.
Poittevin's Patent Disinfected Manure, 13s. 6d. per qr.
Nitrate of Soda, 22s. 6d. to 24s. 0d. per cwt.
Nitrate of Potash or Saltpetre, 26s. 6d. to 27s. 0d. per cwt.
Willey Dust, 4*l.* 4s. per ton.
The Urate of the London Manure Company, 5*l.* 5s. per ton.
Alexander's Chie-fou, or Chinese Manure, 21s. per cwt.

PRICES OF SHARES.

No. of Shares.	IRON RAILWAYS.	Price per Share.	Div. per Share per Ann.
6,300	Birmingham & Derby Junc. 100l sh	57la 9l	1½lper sh
6,300	Ditto ⅓ shares ...... 25l sh 15l pd	10½la11l	10s p sh
9,500	Ditto and Gloucester .... 100l sh	60la0l	
9,500	Ditto Quarter Shares...... 2½l pd	1¾la2¼l	
15,000	Bristol and Exeter..100l sh 60l pd	31la33l	
9,300	Ditto and Glouces.. 50l sh 5l pd		
7,500	Cheltenham & Great West. Union 100l sh 62½l pd	21½la2½l	
3,000	Clarence (Durham)........100l sh	—la0l	
64,000	Eastern Counties ....25l sh 23l pd	7¾l a8l	
64,000	Ditto Debentures..8l 6s 8d..6l pd	8la¼l	
18,000	Edinburgh & Glasgow 50l sh 40l pd	38la0l	
10,918	Grand Junction ....100l sh	203l a0l	14lper ct
10,918	Ditto Half Shares..........50l sh	101l a0l	14lper ct
10,018	Ditto Quarter Shares 25l sh 2½l pd	27¾l a 0l	1l
10,000	Great N. of England 100l sh 90l pd	—la0l	
25,000	Great Western .... 100l sh 65l pd	85la6l	3l per ct
25,000	Ditto Half Shares..........50l sh	59l a½l	3l per ct
37,500	Ditto Fifths..........20l sh 4l pd	9½l a10l	3l per ct
8,000	Hull and Selby............ 50l sh	0la0l	
36,000	London and Brighton ......50l sh	43⅛l a¾l	
33,000	London & Croydon..Av. 13l 15s 9d	12½la 13l	
20,000	London and Greenwich .... 20l sh	7¼la¾l	7s per sh
9,000	Ditto New .... 16l sh	17l a18l	1l per sh
80,000l.	Ditto Debentures (various amounts)		
	Ditto Scrip .. .. 6½l each 5l pd	5¾l a 6l	
24,000	London & Blackwall ...... 25l sh	15½la16l	
1,500	Leicester and Swannington..50l sh	55l	2½l
2,100	Leeds and Selby.......... 100l sh		4l per sh
5,100	Liverpool and Manchester..100l sh	198l	9½lper ct
11,475	Ditto Quarter Shares .... 25l sh	47l	9½lper ct
7,968	Ditto Half Shares .... 50l sh	95l a0l	9½lper ct
36,000	London & S. Western, late London and Southampton Av. 38l 17s 9d	54la5l	3l per sh
36,000	Ditto One-tenth Shares 5l sh 1¼l pd	1⅝la¾l	
6,000	Do.Portsmouth Branch 50lsh 45lpd		5l per ct
25,000	London & Birmingh. 100l sh 90l pd	160la2l	8l per sh
25,000	Ditto Quarter Shares 25l sh 5l pd	23½la4½l	8l per ct
31,250	Ditto .... 32l sh	53la 4l	8l per ct
25,000	Ditto New........... 32l sh 2l pd	24la 5l	
13,000	Manchester & Leeds 100l sh 70l pd	50la1l	
13,000	Ditto Half Shares .. 50l sh 30l pd	20la1l	
30,000	Manchester & Birming. 70l sh 40l pd	22la4l	
10,000	Midland Counties .... 100l sh	86la0l	
10,000	Ditto......¼-Shares of 25l 15l pd	21l a22l	
15,000	North Midland .... 100l sh	64l a 66l	
15,000	Ditto Half Shares ....40l sh	30la2l	
22,506	Ditto ⅓ shares of 32l 6s 8d . 5l pd	5la0l	
12,000	Northern & Eastern 100l sh 60l pd		
3,762	Severn and Wye .. Average 27l sh	45l	2l12s psh
1,000	Stockton and Darlington..Average 100l 13s 4d	255l	14lper sh
28,000	S. Eastern and Dover 50l sh 38l pd	18½l a 19l	
6,000	York & North Midland 50lsh	72la4l	2l 19s sh
0,706	Ditto Half Shares.... 25lsh 10l pd	20la1l	
	JOINT STOCK BANKS.		
15,000	Australasia Bank (Chartered) 40l sh	57la0l	8l per ct
10,000	Bank of Ceylon (Chart.) 25l sh 15l pd		
20,000	Bank of B. N. America (Chart.) 50l sh 40l pd	0la0l	6l per ct
20,000	Colonial Bank (Chart.) 100l sh 25l pd	32½l a0l	8l per ct
2000	Com. Bk. of London 1000l sh 200l pd	180l	
4,000	Ionian State (Chart.) 25l sh 20l pd	15la16l	
30,000	London and Westminster Bank 100l sh 20l pd	22¾la0l	6l per ct
10,000	New Shares ....100 sh. 15l pd	17l a 0l	
60,000	London Joint Stock Bank 50l sh 10l pd	12⅝l a¾l	5l per ct
12,432	Do New, issued at 1l pm 50l sh 10l pd		
20,000	National Bank of Ireland..50l sh 17½l pd	16l a½l	6l per ct
10,000	Do. Provincial Bank of England 100l sh 35l pd	34½la 5l	6l per ct
7,739	Do. New 20l sh issued at 2l 10s pm 10l pd	10la0l	6l per ct
20,000	Provincial Bank of Ireland 100l sh 25l pd	40la1l	8l per ct
4,000	Ditto New............10l sh	15la16l	8l per ct
20,000	Union Bank of Australia..25l sh	30½l a1½l	50s pr sh
12,000	Ditto New 25l sh 15l pd	19la20l	
6,000	Union Bk. of London 50l sh 10l pd	9⅞l a10l	5l per ct
50,000	West of England and South Wales District Bank ..20l sh 12½l pd		6l per ct

Shares.	MINES.	Price.	Dividend
4,000	Alten .... 50l sh 12½l pd		
1,000	Ditto New .... 15l sh 12½l pd		
10,000	Anglo Mexican (iss. 5l pm) 100l sh		
3374 21/25	Ditto Subscription .... 25l sh		
10,000	Ditto Mint .... 25l sh 10l pd		
8,000	Blaenavon Iron & Coal 50l sh 45l pd	20l	
2,000	Bolanoes .... 150l sh		
1,000	Ditto New..........50l sh 20l pd		
	Ditto Scrip .... 25l sh		
20,000	Bolivar Copper Company .. 15l sh	1la0l	
20,000	Ditto Ditto Scrip New .. 3l sh	2la0l	
10,000	Brazilian Imperial 35l sh 21l pd.. iss. 5l pm	0la0l	
11,000	Ditto St. John Del Rey 20l sh 14½l pd	1½la2l	
20,000	British Iron Comp. 100l sh 60l pd		
10,000	Candonga .... 20l sh 8½l pd		
10,000	Copiapo .... 20l sh 12½l pd		
9,204	Hibernian .... 50l sh 11¾l pd	3la0l	
5,739	Mexican Company 100l sh 58½l pd	2la½l	
5,000	Minas Geraes........20l sh 12l pd		
14,460	Real del Monte registered Av. l sh		
	Ditto Ditto unregistered	1¾la2¼l	
17,066	Ditto Loan (Notes) .... 150l sh		
10,000	Rhymney Iron .... 50l sh	23la0l	
28,267	United Mexican 40l sh 40l pd.. iss. 2l pm	1½la2l	
5,281	Ditto Scrip .... 2l pd..	0la0l	
8,057	Ditto ditto (New) ...... 5l pd	4la0l	
	MISCELLANEOUS.		
10,000	Anti Dry Rot Company .. 18½l sh	0la0l	5s per sh
10,000	Assam Tea Company 50l sh 12½l pd		
1,080	Auction Mart .... 50l sh	20l	20s pr sh
10,000	Australian (Agricultural) 100l sh 28l 2s pd	40l a0l	35s pr sh
10,000	Canada Company (Chartered) 100l sh 32½l pd	29la0l	6l per ct
5,000	Droitwich Patent Salt .... 25l sh	16la0l	25s
2,700	Equitable Reversionary Interest Society 100l sh 60l pd		4l per ct
20,000	General Steam Navigation Company 15l sh 14l pd	23½l a4l	1l8s pr sh
1,800	Ditto Cemetery (Chartered) 25l sh		6l per ct
1,800	Ditto New (Chartered) 25l sh		6l per ct
2,100	Hungerford Market ...... 100l pd	32l	20s pr sh
24,800	Ditto Debentures (var. amounts)..		5l per ct
5,000	London Cemetery (Chartered) 20l sh		
1,800	London Corn Exchange....37½l pd	20½la1l	1l per sh
2,000	London Commercial Sale Rooms Average 75l sh	24l	1l
4,000	New Zealand Company ....25l sh	25l	10l pr ct
8,000	Ditto New Shares .... 25l sh		
5,387	Reversionary Int. Society..100l sh	0la0l	5l per sh
14,400	S. Australian Comp. 25l sh 22½l pd	19½l a0l	6l per ct
3,000	South Metropolitan Cemetery (Chartered) 25l sh		
4,000	Thames Tunnel............50l sh	9½la0l	
200,000l	Upper Canada Loan		5l per ct
200,000l	Ditto		5l per ct
10,000l	Van D. Land (Agricultural) Chartered 100l sh 18l pd	8la0l	
5,000	West London and Westminster Cemetery 25l sh		

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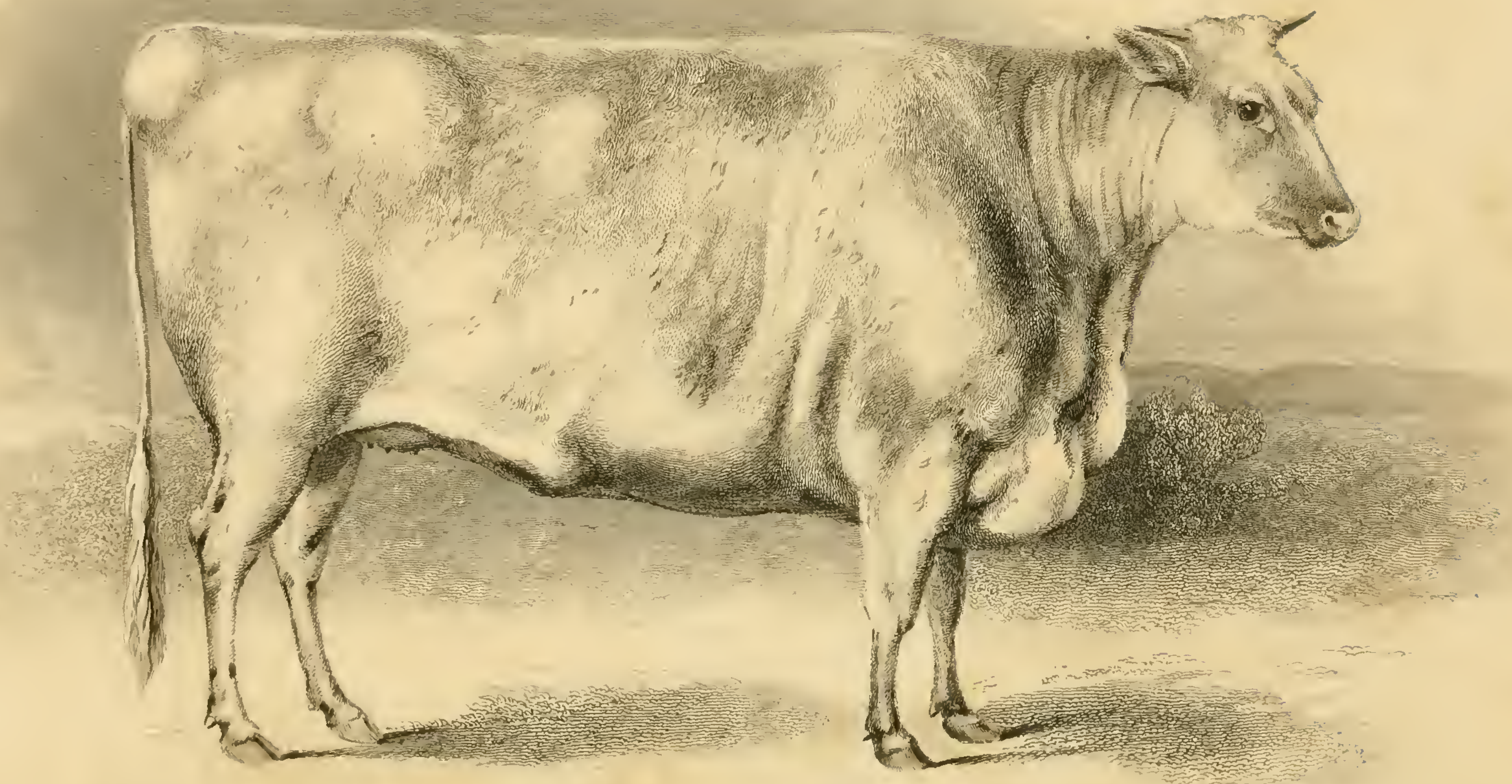

Short Horned [illegible] Heifer.

[illegible] which obtained a prize of £15 at the Cambridge Meeting of the [illegible]

THE FARMER'S MAGAZINE.

SEPTEMBER, 1841.

No. 3.—Vol. IV.] [Second Series.

PLATE I.

The subject of the first Plate is a Short-horned Heifer, the property of the Right Honourable C. Arbuthnot, Woodford, Northamptonshire, for which a Premium of Fifteen Sovereigns was awarded at the Cambridge Meeting of the Royal Agricultural Society.

PLATE II.

DROP DRILL.—*(For Description, see page 180.)*

LIEBIG'S ORGANIC CHEMISTRY.

BY J. TOWERS.

No. III.

At page 79 we concluded our remarks upon the first part of the criticism of this remarkable work, and are now arrived at the second part, which refers to the origin of all the alkalies and alkaline earths found in the ashes of plants. Liebig thus expresses himself, p. 9 and 10—" Let us suppose that humic acid is absorbed by plants in the form of that salt which contains the largest proportion of humic acid, namely, in the form of humate of lime; and then, from the known quantity of the alkaline bases contained in the ashes of plants, let us calculate the amount of humic acid which might be assimilated in this manner. According to the estimates of Malaguti and Sprengel, 1lb. of lime combines chemically with 10·9lbs. of humic acid; 5·6lbs. of the metallic oxides would accordingly introduce into the trees 61lbs. of humic acid, which, admitting humic acid to contain 58 per cent. of carbon, would correspond to 91lbs. of dry wood. But we have seen that 2650lbs. of fir wood are really produced."

Thus there would be a deficiency of 2559lbs. of carbon in the wood produced upon a Hessian acre, by assuming humate of lime as the chemical medium through which the sap should convey it into the organism of the trees. But our critic, taking advantage of the great fact announced by Liebig, that *rain and snow contain ammonia,* and knowing that ammonia dissolves a portion of humus, turns upon and assails him with his own weapon. Thus (at p. 99, Q. J. A.) he observes—" It appears, however, never to have struck M. Liebig, that ammonia or its carbonate *cannot* pass through soil without becoming *combined with humic acid;* yet experiment proves this to be the case; so that *all the ammonia absorbed by plants to furnish them with nitrogen must* have reached them in combination with humic or *some other acid.*" This is a sweeping assertion, and somewhat startling, though rather weakened by the last qualifying *or* —" or some other acid." But though our ingenious doubter has made a bold and plausible hit, he has rather missed his mark, as we may perhaps be able to prove. Ammonia, pure, or as a carbonate (smelling, volatile salt), *will* dissolve some small portion of black mixen dung or decayed leaves, if poured upon them in a funnel, and the liquor will pass through of a brown colour; we admit the fact, and for the sake of not quarrelling with terms, will style this brown fluid "*humate of ammonia;*" but when humus or vegetable mould is laborated in the earth, turned, and moved about in it by spade or plough, and rendered moist by diffused water, what shall we say to it? Is not *lime,* or cretaceous matter, generally present in the soil? or, otherwise, is not *potassa* a constant ingredient of all loams? and will not these alkalies act upon and unite with that soluble portion of humus which is called *humic acid?* If so, what can the small proportion of ammonia contained in rain water effect, when the soluble parts are already in chemical union with alkalies possessing a much higher degree of affinity, or of combining power?

We notice one peculiar circumstance in our writer's mode of attack—he almost invariably admits the justness of all Liebig's main positions; as, for example, the very slight *solubility* of humus in water, the introduction of ammonia into the vegetable organization, the fixation of nitrogen, and yet combats all his inferences! Thus, at p. 99, he observes—"We will suppose, as M. Liebig has, that all the alkalies and alkaline earths found in the plant conveyed to it their full quantity of humic acid; let us therefore take wheat as an example. This grain contains 43 per cent. of carbon, 2·13 of nitrogen, and about 1 of lime and metallic oxides. Now the one per cent. of lime and metallic oxides will introduce 10·9 grains of humic acid, which will furnish 6·32 grains of carbon; and the 2·13 grains of nitrogen are united with 27·3 grains of carbon in humate of ammonia. It follows, therefore, that this grain would receive by the aid of its alkalies 33·62 per cent. of carbon, or upwards of three-fourths of the whole quantity contained in the plant."

We confess that this is a mere begging of the question, and so far from admitting the fact of 27 grains of carbon being furnished by 2·13 of nitrogen, we challenge its authenticity; for we regard it as nothing more than a bald assertion, grounded only upon the supposition that the ammonia of rain water acts upon the humus: the critic in his turn having overlooked the previous and more powerful agency of the alkalies, which naturally form a constituent of the earths.

At this part of our reply we could pertinently cite the experiments of Dr. Daubeny, mentioned in his lecture on the application of manures, just published in the Journal of the Royal Agricultural Society; and we hope the Editor of the *Farmer's Magazine* will publish it entire, as being useful to the agricultural reader, though too voluminous for our present purpose. It is very gratifying that men of science and high endowments should coalesce, and prove to the world that there is nothing rational in mere routine, and that the discoveries already made by chemists only point out in language not to be mistaken, that elementary colleges ought to be established, in which youth might be regularly trained to scientific and physiological agriculture.

The next point objected to, is found in the assertion, that "though carbon is removed every year by every crop, yet the soil becomes progressively richer in carbon. Liebig, at page 14, thus expresses himself:—'40,000 square feet of wood and meadow land produce 1007lbs. of carbon,' while the same extent of arable land yields in beet root, without leaves, 936lbs.; or in corn 1020lbs. A certain quantity of carbon is taken every year from the forest or meadow in the form of wood or hay, and, in spite of this, the quantity of carbon in the soil augments; it becomes richer in humus."

Now this great principle is admitted by the critic, though he demurs at the inference. Liebig considers it as conclusively proved that plants derive all their carbon from the atmosphere, whereas his opponent says, that "if plants received all their carbon from the soil, which *we know is not the case;* still the quantity of this element in cultivated land would increase at the rate of 5737·68lbs. in each rotation, or 1434·42lbs. per annum." The rotation alluded to is that of a four-course, consisting of "turnips, barley, hay, and oats; by, and during which, there would be removed from the soil $9543\frac{6}{10}$ of carbon per imperial acre." But then, 25 or 30 tons of farm-yard dung will have been added to the land, which will contain $15{\cdot}281\frac{28}{100}$lbs. of carbon.

The point of moment is not what is added to the soil, but what is the source whence plants derive that carbon which constitutes their woody fibre. The writer admits, nay asserts, that *they do not receive all* their carbon from the soil; then surely it is fair to enquire how he has come by this knowledge; and why, if plants obtain *some* of their carbon from other sources, they may not, in like manner, obtain the whole of that element?

We do not think it wise, while attempting to refute what appears to be a mere quibble, to appeal to any experiments of the chemical laboratory, but prefer to come at once to some plain evidence afforded by natural phenomena. It is, after all, a question whether man, with his present imperfect powers, will ever fathom the mysteries which involve the processes of vegetable nutrition. But when, without hampering the understanding by calculations of results which require ten thousand decimal fractions, we can appeal to a few plain facts, some point at issue may be so far elucidated as to reduce it to a probability.

Let us look at the cucumber plant for instance, and then take another example in the common chickweed. A seed of the former is sown; and with a little heat the two cotyledons or seed-leaves are speedily developed: after a time, the germ of the central shoot, with its first true, rough leaf, appears between the former; and in this condition it is, that Liebig presumes the chief nourishment to be derived from the carbonic acid of the decaying humus. But the central leader advances, the seed-lobes become yellow, flaccid, exhausted; true leaves are, in detail, fully developed, each accompanied by its tendril, and after a while with a male blossom-bud. From the first expansion of the *true leaves,* Liebig dates the change which takes place in the mode of absorbing carbonic acid; and presumes that those leaves are the organs by which that species of nutriment (if so it be considered) is exclusively introduced from the air. His critic, on the contrary, while he admits that some carbon is derived from other sources, maintains that the ground is still a source of supply through the vessels of the root. But let us watch the cucumber plant in its progress—and especially after it has been stopped several times to produce fruitful laterals—and it will be seen that a vine of amazing extent, a system of leaves of great breadth and succulence, a prodigious number of blossoms, and many fruits—some perhaps growing in a few days to the length of 10, 15, or 20 inches in length—are produced in rapid succession. Yet the stem near the soil, though it become somewhat hard and woody, remains very slender; while, as it advances in height and length, its upper part acquires bulk and succulent substance, and the footstalk of each leaf is absolutely, in many instances, thicker than the main stem at its origin. Whence, we may ask, is all this vast substance derived; what, and where situated, are the organs of supply; does the whole plant attract, and convey through that comparatively dry and juiceless medium—the lower stem—all the moisture, all the carbon, all the substances, in a word, which are to be laborated in the cellular system of the leaves and swelling fruit? Again, is each leaf furnished with thousands of stomates or pores of respiration; and are both its surfaces exposed to, and in actual contact with, a fluid medium, which contains carbonic acid gas in a condition and proportion exactly suitable to the organization of the leaves? These questions are pertinent.

Let us now view the common chickweed, with which man never interferes, otherwise than to eradicate it as an intrusive weed. Here we perceive a most extensive ramification, scores of branches loosely spreading on every side from one central stem, covered with a profusion of acute ovate leaves. But every branchlet is thicker than the stem, which, though very tough is attenuated to the size of a slender hair. Can this mere filament convey the quantity of nutritive fluid which must be required to sustain a system of branches and leaves a thousand times more voluminous in the aggregate than itself? What says the philosophic reader—to which hypothesis does he incline? We make no allusion to a first cause. *That* indeed might so *will*, that an ocean should pass through the channel of a hair! But viewing the question rationally, does not every adduced phenomenon bear evidence to the doctrine, *that the leaves nourish the plant so far as all its gaseous elements are concerned*, the roots operating at the same time upon those chemical solutions which must be derived from the earth? Now, as decomposition takes place in all manures, and the elements of water are then liberated, we may readily account for the accumulation of carbon, by the chemical disturbance excited by all the great natural agents which are called into play by the energy of the vital principle.

We have not space in this article to allude to any remarks of the critic upon ammonia; but must close our observations by an endeavour to rescue our author from the charge of inconsistency which we perceive is brought against him in page 103. It must be admitted that Liebig is too discursive; he does not keep at home, but gives us "here a little, and there a little," thus perplexing the student, and laying himself open to criticism and censure. We now cite all the passages which appear at variance on the subject of humus. 1st. "Plants must derive their carbon exclusively from the air." 2nd. "The roots perform the functions of leaves *from* the first moment of their formation; they extract from the soil their proper nourishment—the carbonic acid generated by the humus." 3rd. "It may be affirmed with positive certainty, that manure neither serves for the production of carbon, nor has any influence upon it." Again, 4th. "Humus acts in the same manner in a soil permeable by air, as the air itself; it is a continued source of carbonic acid." 5th. "An atmosphere of carbonic acid, formed at the expense of the oxygen of the air, surrounds every particle of decaying humus." 6th. "An atmosphere of carbonic acid is therefore contained in every fertile soil, and is the first and most important food for the young plants which grow upon it."

All these are pure, though detached passages, which are found in the early pages of Liebig's book, and upon them we are favoured with the following critique (106.) "We are in this instance told, that manure does not serve for the production of carbon—and afterwards, that the carbon of the humus in the form of carbonic acid is *the first* and *most important* food for young plants. The cause of these direct contradictions is of course known only to the author himself."

We differ from Liebig in his main point to which these passages refer, but must reserve our remarks till more space be at command: but with all deference to our reviewer, we see in them no variance—no contradiction whatever.

The first word which casts a doubt on the meaning of the paragraph may be the fault of the translator —it is the word *from*, in extract No. 2; if we substitute *at*, and read "*at* the first moment of their formation," we give the meaning of the author, and make the passage tally with the extract No. 6. No. 3 is not intended to affirm that manure does not yield carbon to the soil; but solely that it does not supply the matter of woody fibre to the plant when furnished with leaves. Thus then there is no contradiction; for, however mistaken the author may be, he is consistent in his meaning, which is neither more nor less than that the carbonic acid of the soil nourishes the plantlet till its true leaves be exposed to the atmospheric gases.

Aug. 14.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—"A Subscriber" asks for information respecting the rules and regulations which are in force in any place where the allotment system is in operation, and complains that in his locality the plan pursued does not work well; but he writes in such general terms that no definite idea can be gathered therefrom, as to whether the fault lies with the owner or the occupiers, thus to be productive of evil, when in nineteen cases in twenty the result is an unmixed good.

The plan of allotting portions of land to the labourer is one in which I feel much interested; and though unable to present a ready cut and dried set of rules for your correspondent's perusal, if the following observations on the subject generally will be of any use whatever, they are at your service.

One of the objects contemplated by the establishment of agricultural societies is stated to be the encouragement and benefit of the labourer; and in support of that view we have a premium offered to the man who has brought up the largest family by his own unaided exertions, to the one who has been the longest period on one farm, and to the most successful shepherd; and, as a further proof, the successful candidates have been known to dine at the anniversary meeting with Lord This and the Earl of That—have had a glass of wine handed to them, and have been told, whilst receiving the premium, to go home and inform their fellow labourers what they have seen and heard, as the most convincing proof of the great interest the higher classes take in their welfare; and in addition we have "Prosperity to the Agricultural Labourer" on the list of toasts, drunk with all the honours, &c. Now all this looks very fine on paper, and it is quite possible that those who will fill a bumper to his health and drain it most patriotically, may believe that in thus "feeling for him," and entertaining a kind of general wish for his happiness, they do quite as much as can be required of them, or is in their power; but if any one of these persons, who are landowners, were to be told that it was in his power to do more good to the labourers himself, in his private capacity, than the whole association put together were doing at present *(as* an association), and this too at no pecuniary cost to himself, he would be very sceptical on the subject. In fact, the fault of the allotment system, with many who profess to be anxious for the poor man's welfare, is that it is too practical and direct in its effects—there is no romance about it; and they proceed in the matter much on the same plan as that laid down by Pyrrhus, when he had resolved to gratify and enjoy himself in his capital,—they must needs overrun Italy, then pass over into Sicily and Africa, after subduing which, they must conquer Spain and Gaul before they come to the point; and a suggestion to do good in a direct way meets with as little approbation from them, as the advice of the monarch's prime minister to enjoy himself then and there, without going such a roundabout way to obtain it, was palatable to him.

I have no wish to depreciate the merits of agricultural societies; they are of great use in the promotion of good farming and grazing; but the labourers' sun is nearly set ere he is eligible to compete for most of the premiums, and no individual of this class has a greater chance of being directly benefitted by them than any common sailor has of becoming an admiral; but any single landowner has it in his power, by the appropriation of twenty acres upon right principles amongst the poor, to cause comparative comfort to spring up in the dwellings of forty families; an amount of good which ought to be more gratifying to the mind of any man than any premium he might be able to carry off from the greatest agricultural society whatever, honourable though the latter circumstance undoubtedly would be to the successful competitor. I was lately witness to a most splendid show of live-stock and implements in the town of Hull; but though there was an admirable collection of ploughs—thanks to the Messrs. Ransome.—there was an implement wanting to make the assortment complete. I recollect seeing a letter in one of the numbers of the Magazine for last year, wherein the writer eulogizes a plough of his so much, as to warrant it to plough everything but a prejudice; and though I witnessed swing, turnwrist, double, trenching, subsoil, and potato-taking-up ploughs, there was no implement for that specific purpose. When the minds of the landowners shall be divested of that groundless dislike to give the poor man an opportunity of doing something for himself with which too many of them are imbued, and are accessible to common sense, reason, and justice, in this matter; the direct friends of the labourer in that class will then constitute the majority, instead of being what they are now—a few honourable exceptions to the general rule.

Let us take a survey of the efforts a landowner has to make, who is desirous of allotting to the labourers of a village their half-acre each, when the farms are not on lease; why they are simply these—let him pitch upon the requisite quantity of land of good quality, and conveniently situated for the purpose, and the loss to the farmer may be thus made up;—if taken from a small farm, lay another field to it from one of the large ones, and allow the latter to plough out a piece of grass to make up the deficiency in his arable, and the thing is done. I venture to assert that there is not one landlord in five who would feel much hesitation in acting thus, did he want a field to plant with trees, as cover for game, or for any other purpose than this; but on a proposal to convert a field into cottage gardens, there are instantly so many lions in the way, that all further steps are immediately abandoned.

There are those who consider the poor man merely in the light of an animal, necessary to the cultivation of the land, and consequently to the production of rent; and who otherwise would not permit him to set foot on their territory on any pretext whatever—who look upon the rousing of a hare from her form, or the disturbance of a covey of partridges by the tired labourer, if he should cross the fields by the most convenient path to his home, instead of a greater distance by the waggon way, as a far greater crime than anything of an immoral kind which he could possibly commit; and who would not grant him a foot of land through the suspicion that he might be tempted to take the life of some of these his heart's treasures, if opportunity served: from *these* nothing can be expected; they may safely be left to the decision of that tribunal, before whom earthly power will be of no avail. There are others who may not be indisposed to grant the boon, but who give way to the adverse influence of some of their overgrown tenants—a class, by-the-bye, not a whit more favourable to the plan than the generality of landlords: and there are others who go a step further, and *act* as well as think; but in some of these cases, sorry am I to observe that the foul fiend, avarice, insinuates its loathsome form into the otherwise fair transaction. When the land is found and allotted out, some how or other it is not deemed sufficiently advantageous to the poor, unless the rent previously paid by the farmer be enormously increased to them. It really seems as if, after all, the owner could not make up his mind to *sacrifice* the land for the purpose, without being well bribed to it; and even after having proceeded thus far, perhaps from the idea that the labourer will not know what to do with his land after he has got possession of it, without their assistance, there is generally such a multiplicity of rules prescribed for his direction, and to which he is obliged to subscribe beforehand, as is a great drawback to him in most cases. The farmers, no doubt, are actuated by good intentions, but if what Latimer says be true, that a certain place is paved with them, it ought to be ascertained whether the rules prescribed will work well, ere they are permanently retained. It takes its rise from that passion for legislation which, beginning with the legislature itself, teeming its private bills out by the score, without one fourth of the members knowing anything of them, descends to the bottom of the scale, and imagines it is essential to the proper growth of a few vegetables. So fearful are they that the legs of the occupier will be unable to sustain his weight, that to prevent that possible evil, they fasten a crutch under each armpit, and compel him to enter into an agreement never to take a step without them—no wonder that his progress is often slow, thus encumbered. In one of the magazines of last year there is a statement of sundry doings in Nottinghamshire, and the writer complains that the labourers often broke the rules—some of them *would* sow their wheat with the plough, &c., and they were very insubordinate. A set of rules was laid down in the same article, but by an adherence to them the poor man would be required to work an hour every evening during two months in the autumn, and three in the spring. Though it would be twilight in four months out of the five ere he reached home from his regular labour and had taken his supper, yet he was expected to work an extra hour after that—in the dark, I suppose; in fact it was a system of pure slavery, and called forth a severe though well merited reproof from another correspondent, in which its real tendency was admirably exposed. In too many cases there appears to be a far greater degree of anxiety to contrive the largest possible amount of *labour*, than of profit and advantage to the occupier. They must arrange *everything* for him, forsooth, and leave his *head* totally unoccupied, whilst they take care that the opposite shall be the case with his *hands*.

I believe the following rules to be all that are requisite to ensure the well working of the system, and to its producing the greatest amount of good to the occupiers:—1st, *Furnish the land.* 2ndly, Add to the rent previously paid the rent-charge, if any, and the estimated sum of the parochial rates, and let that be the future rent to be paid; and charge no more than that on any pretext whatever. And 3rdly, If the pieces approach to half an acre each, stipulate that one-half of each allotment shall be in straw crop annually, and having done thus much, leave the rest to the judgment of the tenants. Treat them as men and not machines, and they will well repay it: fix the rent-day when you please, it will be sure to be paid cheerfully: when there are several pieces together, they will require no rules to stimulate them; spurred on by self-interest, they will be rivals to each other, and any one of them would fear and dislike the criticisms of his fellows far more than a reprimand from high quarters: there would be employment for his mind, too; and though in his occasional attempts to do *better* than well, he might come somewhat *short* of it, he would never do the same thing twice after this result; and he would have tenfold the pleasure in working his land on his own responsibility than under a code of petty, annoying, and vexatious restrictions, which *might* do credit to the ingenuity of a *lawyer*, but which would be only so many hindrances to the poor man's prosperity, and to the exercise of those feelings of gratitude and kindness, which a more liberal and confidential treatment of him would be sure to call forth and maintain. I greatly suspect that in the instance complained of by "A Subscriber," the tenants are either rent-ridden or law-ridden; if he have the power, and the first should be the case, let him reform it; if the second, let him throw them all overboard, or nearly all; and I will venture to predict that for the future he will have no cause for complaint.

In the preceding remarks I would not be understood to be an advocate for an unlimited parcelling out of land, nor that every person who chooses to marry without any reasonable prospect of maintaining himself, should have a kind of claim, on the ground of poverty, wilfully brought on by himself. Such a procedure would in the course of time reduce the peasantry of England to the condition of those of Ireland; but I *would* give the privilege to as many labourers as were required for the purposes of agriculture, and the surplus (if any) should be taught to look to other sources and quarters, in order to better their condition and prospects.

August 14th. B. H.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—I would advise "An Enquirer," in order to get rid of the weed he speaks of—the same, I suppose, which goes by the name of runch, charlock, and retlock, in other districts—to drill his spring corn in nine-inch rows, and delay the sowing of his cloverseed till the corn is up; then let him hoe between the rows, and sow the seeds immediately afterwards, covering them with the roller or very light harrows; and as many of the enemy as are *in* the rows he must handweed as soon as the stalk is sufficiently grown to be laid hold of. He must not expect to get rid of them by weeding one single crop, for long previous neglect will be sure to have left a large stock of seed in the land, ready to spring up when circumstances are favourable; but let him resolve that there shall be no *further* increase of seed, and act upon it for three or four years, and he will find his unwelcome guest become gradually weaker, and a moderate annual expense after this in handweeding will keep his barley or wheat fields *green* at the period referred to, instead of yellow.

O. P. Q.

THE POTATO.

(FROM A HISTORY OF THE VEGETABLE KINGDOM, BY WILLIAM RHIND.)

The potato, (*solanum tuberosum.*) This valuable plant belongs to the family *Solaneæ* of Jussieu; almost all the species of which family are of a poisonous and narcotic quality, as the *belladonna, solanum, dulcamara, hyosciamus, tobacco.* What is remarkable, however, it is only particular parts of many of these vegetables which possess the narcotic qualities, the other parts being perfectly innoxious and edible. Thus the root and berry of the dulcamara are perfectly harmless, as well as the root of the solanum tuberosum. The Solaneæ are characterised by the peculiar form of the flower, of which that of the potato is a familiar example. The potato belongs to the Linnæan class *Pentandria;* order *Monogynia.* It is a perennial herbaceous plant, rising with a slender branching stem to the height of two or three feet. The leaves are of a roundish form, of unequal size, and of a dark green; the petals are white, or of a purplish tinge; the fruit is a large berry with a greenish pulp, which latterly changes to black, containing numerous small seeds in the centre.

Besides the true roots of the plant, there are numerous runners which grow out from the stem, and which bear the tubers or potatoes. There are numerous scars or eyes on the tuber, from whence proceed the rootlets and future germs of a new plant; hence, in cutting up potatoes for seed, care must be taken that each division possesses one of these eyes or points of germination. The pointed end of the potato which is attached to the runner or root, is more matured than the rounder end, which is of a soft, waxy, and watery nature, while the other is dry and farinaceous.

Gomara, in his General History of the Indies, and Josephus Acosta, are amongst the early Spanish writers who have mentioned the potato by the Indian names, *openauck*, *pape*, and *papas*. Clusius, and after him Gerard, gave figures of the plant; and Gerard gave it the name of *solanum tuberosum*, which Linnæus adopted.

There is perhaps no vegetable product, not even excepting the cerealia, or the most useful of the palm tribe, which has proved of such essential importance, or which is likely still to have such an influence on the population of the temperate regions as this admirable root. One could scarcely have believed that, in little more than two centuries, a small and almost neglected tuber, transported from the newly discovered regions of Mexico, where it occupied but a very insignificant space, and was but sparingly, if at all, used as human food, should have been multiplied so as to form the principal subsistence of millions of human beings for succeeding generations. Humboldt, in his essay on the kingdom of New Spain, gives the history of the potato. He believes that the plant described by Molina under the name of Maglia, is the original stock of this useful vegetable, and that it grows in Chili in its native soil. He supposes that thence it was transported by the Indian population to Peru, Quito, New Granada, and the whole Cordilleras.

Among the Chonos islands, Mr. Darwin saw the wild potato growing abundantly. They grow near the sea beach in thick beds, on a sandy shelly soil, wherever the trees are not too close together. In the middle of January they were in flower; but the tubers were small and few in number, especially in those plants which grow in the shade, and had the most luxuriant foliage; "Nevertheless, I found one," says he, "which was of an oval form, with a diameter two inches in length. The raw bulbs had precisely the smell of the common potato of England; but when cooked they shrunk, and became watery and insipid. They had not a bitter taste, as, according to Molina, is the case with the Chilian kind, and they could be eaten with safety. Some plants measured from the ground to the tip of the upper leaf, not less than four feet. There can be no doubt, from the state in which they grow, and from their being known to the various Indian tribes scattered over the country, that they are indigenous, and not imported plants."* Mr. Cruickshanks thus farther corroborates the above remarks.

Mr. Lambert, in the tenth volume of Brande's Journal, and in the appendix to his splendid work on the genus *Pinus*, has collected many valuable facts which prove that the potato is found wild in several parts of America, and among others in Chili and Peru. Don José Pavon, in a letter to Mr. Lambert, says, "The *solanum tuberosum* grows wild in the environs of Lima, and fourteen leagues from Lima on the coast; and I myself have found it in the kingdom of Chili;" and Mr. Lambert adds, "I have lately received from Mr. Pavon very fine wild specimens of *solanum tuberosum*, collected by himself in Peru." There is also a note from Mr. Lambert on the same subject, in the third volume of the New Edinburgh Philosophical Journal, with an extract from a letter of Mr. Caldcleugh, who sent tubers of the wild plant some years ago, from Chili to the Horticultural Society. But it is frequently objected, that in some of those countries where the potato is found wild, it may, like many other species met with in that state in America, be an introduced, not an indigenous plant. There are, however, many reasons for believing that it is really indigenous in Chili, and that wild specimens found there have not been accidentally propagated from any cultivated variety. In that country it is generally found in steep, rocky places, where it could never have been cultivated, and where its accidental introduction is almost impossible. It is very common about Valparaiso, and I have noticed it along the coast for fifteen leagues to the northward of that port; how much farther it may extend north or south, I know not. It chiefly inhabits the cliffs and hills near the sea, and I do not recollect to have seen it at more than two or three leagues from the coast. But there is one peculiarity in the wild plant that I have never seen noticed in print, that its flowers are always pure white, free from the purple tint so common in the cultivated varieties; and this, I think, is a strong evidence of its native origin. Another proof may be drawn from the fact, that while it is often met with in mountainous places, remote from cultivated ground, it is not seen in the immediate neighbourhood of the fields and gardens where it is planted, unless a stream of water run through the ground, which may carry tubers to uncultivated spots. Having observed the distribution of this and other plants through the agency of the streams employed for irrigating the land, I am led to think that the wild specimens found near Lima may have had similar origin. If they occurred in the valley, this is more than probable, as almost the whole of the land is either cultivated by irrigation, or the uncultivated spots are overflowed when the river is swelled by the rains in the interior. Upon the whole, it may be safely concluded that this important vegetable is really indigenous to Chili; but with respect to Peru, some further evidence appears necessary to remove all doubt on the subject. The question can only be decided by ascertaining the exact situations in which the plants present themselves at Lima and Chancay, especially with respect to land that is or has been cultivated. It would be interesting, too, to know the colour of the flowers.

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* Darwin's Natural History of Voyage to South Seas, 1840.

There is strong evidence for believing that this plant was first introduced into England by the colonists adventuring to North America under the auspices of Sir Walter Raleigh, who had obtained a patent in 1584, from Queen Elizabeth, "for discovering and planting new countries not possessed by Christians." Thomas Heriot, afterwards known as a mathematician, was among these voluntary exiles; who, however, all returned within two years after they had first gone forth for the purpose of founding a colony. These voyagers most probably brought home the potato, since in Heriot's report of the country, which is printed in De Bry's collection of Voyages, he describes (vol. i., p. 17), under the article Root, a plant called openawk, which, there is little doubt, is identical with the potato. "The roots of this plant," says he "are round, some as large a as walnut, others much larger; they grow in damp soils, many hanging together as if fixed on ropes. They are good food either boiled or roasted." The introduction of this plant into Ireland by Sir Walter Raleigh, on his return from Virginia, is indeed well authenticated by corroborative testimony. In the manuscript minutes of the Royal Society, we find that Sir R. Southwell distinctly stated to the fellows, that his grandfather was the first who cultivated the potato in Ireland, and that for this valuable root he was indebted to Sir Walter Raleigh.* Among the anecdotes told of this enterprising voyager, it is said that when his gardener at Youghal, in the county of Cork, had reared to the full maturity of "apples" the potatoes which he had received from the knight, as a fine fruit from America, the man brought to his master one of the apples, and asked if that were the fine fruit. Sir Walter having examined it, was, or feigned to be, so dissatisfied, that he ordered the "weed" to be rooted out. The gardener obeyed, and in rooting out the weeds found a bushel of potatoes.

In contradiction to the above account, Dr. Campbell, in his Political Survey, states that this plant was not introduced into Ireland until the year 1610; while some writers affirm that the people of that country were in possession of the potato at a period prior to the one just assigned. One supposition is, that this root was brought from Santa Fe into Ireland in the year 1565; and another, that it is of so very ancient a date in that island, as to make it equally probable that it is a native vegetable of the country.

It is found, however, that the plant carried to Ireland by Captain Hawkins, in 1565, was the Spanish batata, or sweet potato. The claim to its greater antiquity in that country was made by Sir Lucius O'Brien, who stated to Mr. Arthur Young that the venerable Bede mentioned this plant as being in Ireland about the year 700. Sir Lucius did not, however, point out the passage containing any proof of his assertion; and the potato, largely as it is cultivated in that country, has not yet made out its title to a place in the indigenous flora of Ireland.

Gerarde mentions in his Herbal, published 1597, that he cultivated this plant in his garden, where it succeeded as well as in its native country. He gives a drawing, which he distinguishes by the name of Virginian potato, having, as he states, received the roots from Virginia, otherwise called Nozembega. It was, however, considered by him as a rarity, for he recommends that the root should be eaten as a delicate dish, and not as common food.

From the authority of more than one writer, it would appear that the potato was brought into southern Europe through a different channel, and at an earlier period than the introduction of the root from Virginia into this country. Clusius relates that he obtained this root at Vienna in 1598, from the governor of Mons in Hainault, who had procured it in the preceding year from Italy, where, in common with the truffle, it had received the name of *taratoufli*. Peter Cieca, in his Chronicle, printed in 1553, chap. xl. p. 49, relates that the inhabitants of Quito and its vicinity, besides producing maize, cultivated a tuberous root which was used as food under the name of *papas*; this, it is affirmed, is the same plant which had been transplanted to the south of Europe, and which Clusius received from Hainault.

Though now so extensively used, the value of this root as an esculent was not perfectly appreciated for a great length of time in this country, during which period it was indeed only cultivated in gardens, and that as a curious exotic. The potato was considered as a great delicacy in the reign of James the First. At that period, though it formed one of the articles provided for the household of the queen, the quantity used was extremely small, and exorbitantly dear, being at the price of 2s. per pound. This esculent remained equally scarce throughout the turbulent times of the succeeding reign, and during the Commonwealth. Its cultivation very gradually spread in different parts of Ireland, and also into Lancashire, but not till nearly a hundred years after the discovery of Virginia by Raleigh. Mr. Buckland, of Somersetshire, in the year 1663, drew the attention of the Royal Society to its value, earnestly recommending the general cultivation of the potato throughout the kingdom to guard against a famine. This appeal was not made in vain. A committee was appointed to inquire into its merits, and all those Fellows of the society who had lands adapted for the growth of the potato, were entreated to plant them with that vegetable; while Mr. Evelyn was requested to notice the subject at the close of his Sylva. This celebrated man appears, however, not to have been aware of the importance of the potato as an article of food, for he did not mention it until more than thirty years after that period, and then in rather slighting terms. In his Kalendarium Plantarum, the first gardener's calendar published in Britain, he thus writes:—Plant potatoes in your worst ground. Take them up in November for winter spending, there will enough remain for a stock, though ever so exactly gathered. In another of his works, Acetarius, he remarks that the small green fruit or apples of the potato make an excellent salad.

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* Library of Useful Knowledge.

This assertion has not, however, been verified by experience.

The zeal of the Royal Society to promote the growth of this vegetable, failed for a long time to exercise much influence upon the habits of the nation; and, if we may judge from the opinions which were published respecting the plant, we must conclude that the necessities of the poor of Ireland, who have ever been left too entirely to their own resources, did more to promote the culture of potatoes than all the labours of the learned, and the philantropy of the patriotic. At the end of the seventeenth century one writer on gardening, indeed, admits that "potatoes are much used in Ireland and America as bread, and may be propagated with advantage to poor people." Woolridge, who wrote in 1687, twenty-four years after the appeal of Mr. Buckland, describes potatoes as being very useful in "forcing fruits," stating that they are planted in several places in this country to good advantage; he add, "I do not hear that it has been yet essayed whether they may not be propagated in great quantities for the use of swine and other cattle." The celebrated Ray, who began to publish his Historia Plantarum in 1686, takes no farther notice of this vegetable than by saying that it is dressed in the same manner as Spanish batatas. Merritt, who wrote in the following year, records that potatoes were then cultivated in many fields in Wales, but in what part of the principality he does not mention.

On the other hand, Lisle, who made observations on husbandry from the year 1694 to 1722, is wholly silent about the potato. In Mortimer's Gardener's Kalendar for 1708, this plant is directed to be sown in February; and, as if its character had not been generally known, it is added, that "the root is very near the nature of the Jerusalem artichoke, although not so good and wholesome, but that it may prove good for swine." In the Complete Gardener, by the eminent nurserymen, Loudon and Wise, the seventh edition of which was published in 1719, no mention is made of this root; and Bradley, who wrote about the same time, and whose very extensive works on horticultural subjects treated expressly on new improvements in the art, notices it as if by compulsion. "They (potatoes) are," says he, "of less note than horse-radish, radish, scorzonera, beets, and skirret; but as they are not without their admirers, I will not pass them by in silence."

These facts and extracts are curious, as they serve to show that this most valuable article of food was not brought into general use by the skill and labour of professional men, but in defiance of their prejudices, and the bad methods of culture which they promulgated. There can indeed be little doubt that the imperfect modes of both cultivating and preparing the potato as an esculent, were in a great measure the causes which prevented its more speedy adoption as a wholesome and substantial article of food: while this very ignorance of its nature and management produced the low estimation in which it was held by writers about the beginning of the eighteenth century.

To those who know anything practically of the cultivation of this plant, it must be evident how much the early sowing, the late taking up, and the leaving in the ground during winter of the roots intended for propagation, tended to deteriorate the quality of the potatoes. These circumstances, together with the little culinary skill exercised in its preparation, caused it to appear under no very tempting form. A person who had been invited to taste the first potatoes which were planted in the county of Forfar, in or about the year 1730, related that the roots had been merely heated, and that they adhered to the teeth like glue, while their flavour was far from agreeable. The food was about to be condemned through the ignorance of the cook, when the accidental arrival of a gentleman who had tasted a potato in Lancashire, caused the rejected roots to be remanded back to the hot turf ashes till they became as dainty as they had before been nauseous.

We have no records of the early practice and progress of potato husbandry in Ireland. The more tardy progress, and the less favourable results, attendant on this culture in England might induce a belief that it had been better conducted in the former country; though no doubt the more genial climate of Ireland, its humidity, and the absence of those chilling winds from the east, which are so often fatal to the tender spring crops of England, gave to it a natural advantage, and might perhaps sufficiently account for the superiority of this branch of husbandry in Ireland over England.

The early practice in this country of planting potatoes in February was, in itself, an effectual bar to their goodness as field culture, since the young plants betray their origin to have been from a warmer climate, by their inability to bear the slightest degree of frost with impunity; so that if they put forth their tender heads to the nipping frosts of spring, a great part of the crop is certain to fall a sacrifice. The better quality of the potato grown in Ireland, and its excellence as a substantial article of food among a population sunk to the lowest state of poverty, caused it to be brought into general use in that country, finding its way even to the tables of the rich, at a period when it was scarcely known in the sister island.

The introduction of this plant into Scotland was probably earlier than into any part of England, with the exception, perhaps, of Lancashire. The people living in that county were then distinguished by a marked difference of habits, manners, and character from their neighbours. A remnant of these peculiarities is even still to be found, notwithstanding the singularities of the inhabitants, and local circumstances, combined to render this a favourable situation for the introduction and improvement of the potato.

The land in Lancashire is rather poor, and the climate rainy, so that wheat, with even the present improved system of husbandry, cannot be raised to very great advantage. Oats were consequently, there, as in Ireland and the lowlands of Scotland, the staple production. The mechanics, who worked chiefly in iron and brass, were all cottagers, who followed their respective employments in the winter, and raised food for themselves upon their little patches of land in the summer. The population of Lancashire then bore a great resemblance to the cotters of Ireland. They were, however, more ingenious in handicraft works, and still more resembled the manufacturing peasantry in the centre and south of Scotland, who grow the whole or the greater part of their food upon their cottage lands. Even the education of their children was formerly often obtained out of the produce of their little field; the schoolmaster went thigging, that is, collecting a portion of produce from every cottager, in proportion to the wealth of the individual, and to the number of pupils he might have contributed to the schoolroom. The poor likewise were relieved by a voluntary contribution of produce, and it is probable that this system worked as well as that of a compulsory rate. Even in the smaller burghs of Scotland, and in the villages where the lands are held on *feu* or perpetual lease, the same system was, and in many places still is, followed. The portioners, as they are called, are allowed a house in the village, and land for their subsistence, in the surrounding fields.

In such a state of the peasantry the cultivation of the potato would offer peculiar advantages, as no other substantial article of food could be raised by the inexperienced rustic in equal quantities, with so little risk and trouble, and without any but his own and his family's being required for its culture and after-preparation. Accordingly, when once this plant was introduced into cottage cultivation in Scotland, its importance was quickly recognized.

It is understood, however, that this valuable root was not, until the year 1728, made the object of useful culture among the Scotch, and they were then indebted to a cottager for first attempting its culture. This man's name was Thomas Prentice; he was a day-labourer living near Kilsyth, in Stirlingshire, and drawing his subsistence partly from the produce of his little plot of ground. This crop proved extremely valuable, and was almost instantly in demand for propagating other crops, first among the cottagers, and then among the farmers. Prentice continued to cultivate this root very carefully, and to supply his neighbours with the produce of his crop. He was, moreover, frugal and industrious, so that in a few years he found himself in possession of two hundred pounds, no small fortune at that time and in that place. When he had "made his fortune," he sank his capital in an annuity, at a good interest, upon which he lived independently to an old age. The last years of his life were spent in Edinburgh, where he died in the year 1792, at the advanced age of eighty-six, having thus been, for sixty-four years, a witness to the happy effects of the blessing which he had been instrumental in conferring on his country.

But notwithstanding the success that attended the culture of the potato among the cottagers, its progress among the higher classes in Scotland was retarded by the opinions of the writers formerly alluded to; while, what is not a little singular, a mistaken zeal in religious matters made some of the Scotch folks hostile to the innovation. "Potatoes," said they, "are not mentioned in the bible," and thus the same anathema was pronounced against them as against "spinning-wheel," and the "corn farmers."

The name of this plant was indeed inserted in the Hortus Medicus Edinburgensis, published by Sutherland in 1683. It is therefore probable that the potato had been introduced as a curiosity into some of the gardens about Edinburgh some time before it was brought into full culture by Prentice. But if its management was the same as that recommended by so great an authority as Evelyn, the produce was, most probably, of little value.

The year 1742, which was long remembered in Scotland as the "dear year," gave an impulse to the cultivation of the potato. Old people who were still living at the beginning of the present century, represented the state of things in the summer of 1743 as being dreadful. Many of the destitute wandered in the fields seeking to prolong the misery of existence by devouring the leaves of peas and beans, of sorrel and other wild plants, while not a few perished from absolute want, and still more were carried off by those diseases which always follow and aggravate the devastations of famine. This state of distress naturally called the general attention to the cultivation of the potato, and indeed to the whole agriculture of the country. So that, during the latter half of the eighteenth century, the practice and science of husbandry made much more rapid progress in Scotland than in England. Previously to this general scarcity in 1743, some potatoes which were growing in the county of Roxburgh, were so uncommon as to have been considered objects of curiosity. But the state of things soon altered: and immediately after the "dear year," the farmers of Lothian began to make this a branch of field husbandry.

In England, with the exception of Lancashire, the progress of the cultivation of the potato continued at an extremely slow pace. It was known in Yorkshire only as garden produce down to 1760; and in Somersetshire it was rare indeed to meet with a whole acre under this culture so late as 1770.

So little attention had been bestowed on this subject even by the most intelligent land-owners, that Miller, in the quarto edition of his Gardener's Dictionary, published in 1771, names only two varieties, and founds the distinction of these not upon quality, or time of coming to maturity, but on the trifling accident of a red and of a white colour, which is found to be productive of no other difference. At present, however, the varieties are so numerous, without any reference to colour, that it would be equally vain to attempt their description within any limited compass, as it is unnecessary to point out their uses, or enumerate their properties.

Not many years after the appearance of Miller's valuable work, the potato began to form an important article of English husbandry; and in the year 1796 it was found that in the county of Essex alone seventeen hundred acres were planted with this root for the supply of the London market.

The culture of the potato is now so extensive in this country, that an abundant supply can be obtained in all places throughout the year, and such have been the improvements in the culture, and the varieties to which these improvements have led, that a succession is furnished fresh out of the earth for nearly six months in the year. The early sorts have been the reward of horticultural skill now so successfully exerted in this country; under the shelter of frames, with careful management, the tender young plants are made to struggle through ungenial weather, and to produce tubers at the earliest approach of summer.

The culture of the potato in the rest of Europe appears to have attained to no great extent until during the last century. In the latter half of this period it was made in more than one country a subject of interest and inquiry. Several works published about that time, treating on its culture, are to be found in both the French and German languages. From one of these, we learn that the potato was introduced from England into the Netherlands; and was thence transplanted into some parts of Germany. It was first cultivated in Sweden in 1720, but, notwithstanding the exertions and recommendations of Linnæus, it did not come into general cultivation until 1764, when a royal edict was published for the encouragement of this branch of husbandry.

The potato was still unknown to the agriculturists of Saxony so late as 1740; but so rapidly did its culture increase, that less than thirty years after the above date, a small detachment of the French army, while in that country, having its supplies wholly cut off, the soldiers subsisted for eight or ten days entirely on potatoes obtained from the fields; nor was this manner of living considered among them as by any means a hardship.

The Swiss discovered the value of this cultivation about the same period in which it was introduced into Sweden, and in a few years they not only grew potatoes among their mountains in abundance, but had likewise learnt the art of drying them, grinding them into flour, and making them into bread. A traveller in 1730 relates that the miller of Untersen had scarcely anything to grind but potatoes; and in 1734 a peasant was so well aware of the profit arising from this culture, that he bought a small field situated near the Swiss mountains, and in only two years after paid the purchase-money by the produce of his potato crops.

It is said by another writer, about the same period (1770,) that during the twenty-five or thirty years preceding, the culture of this root in some parts of Switzerland had so much increased, that it constituted the food of two-thirds of the people. In the present day it still forms a principal article of food among the peasantry of that country.

It likewise makes a very prominent figure in the husbandry of Poland, where it is cultivated to an extraordinary extent. In 1827, as much as 4,288,185 korzecs, (about 2 cwt.) of potatoes were produced in that country, while 4,439,399 korzecs of rye were reaped, 3,183,023 of oats, 4,506,062 of barley, and 751,076 of wheat.

The cultivation of the potato has been of late years introduced into some parts of India with every prospect of success. In Bengal, especially, it has been attended with the most satisfactory results. Bishop Heber, in his interesting Journal, notices in several places the progress of this culture, the crops becoming by degrees more and more extended. These roots were at first very unpopular, but they have gradually gained favour, and are now spoken of as being the best gift which the natives ever received from their European masters. They are, as we are told, held in much esteem, "particularly by the Musselmans, who find them very useful as absorbents in their greasy messes." The following observations are gathered from the same volumes. In the neighbourhood of Patna many descriptions of European vegetables are brought to market in abundance; they are, however, reared for the consumption of the European inhabitants alone, the natives rejecting all but the potato, which, though known only since the last few years, may perhaps soon take its rank with rice and plantains, as a substantial article of food with the frugal Hindoo. It is already largely cultivated in that district, but can never become an exclusive crop, inasmuch as those humid stiff soils which are peculiarly favourable to the growth of rice, are wholly unsuited to the potato, the cultivation of which must therefore be confined to those sandy and drier soils, which are inimical to the culture of the rice plant. In such situations this vegetable of English production may be raised with unmixed utility, while the resource of so important a supplementary crop may, in seasons of the failure of the rice harvest, avert the evils of famine, and diminish, in one strong point of view, the resemblance between the Indian and Irish peasantry, their reliance on a single article of food. The almost infinite division and subdivision of their farms is in India, as in Ireland, a fertile source of poverty and wretchedness.

The observations of another intelligent writer on the same subject likewise tend to show the advantages which may result from this cultivation in Hindoostan. He remarks that a dry season is prejudicial to the rice crop, while it is favourable, or rather not so hurtful, to that of the potato, and "therefore nature points out the one crop as a substitute when the other fails." It is certainly a fortunate circumstance that the superstition by which the Hindoo is enslaved does not shut up every avenue to innovation and improvement. No religious prejudice forbids the culture of this vegetable, and therefore the natives evince a readiness to adopt it in all situations where it can be as easily obtained as other food. The soil of Bengal, and the long continuance of dry weather, may, perhaps, be obstacles sufficient to prevent this root from becoming the principal nourishment of the lower orders; but it is supposed that if it could be raised cheaper than rice, the potato would be generally preferred by Hindoos. At present it is almost universally served up at European tables in Bengal in the same manner as in England; and though the crop is less abundant, and the roots are smaller in size, they are scarcely inferior in quality to those of this country.

Wherever the Englishman seeks a home, he always strives to naturalize this root, which was so long struggling into notice in his own country. Now amid all the luxuriant and delicious vegetation of tropical climes, he still retains his preference for that simple vegetable, which he considers almost a necessary of life. At Ceylon all his attempts to cultivate this plant have been nearly vain, as it will not thrive in that island at any place except at Candy, a town almost seventy miles in the interior, and the only spot in the country where European vegetables come to any degree of perfection. A basket of these roots is sent every morning thence for the supply of the governor's table, as all the indigenous vegetables are considered an inferior substitute for this necessary auxiliary to the Englishman's more substantial fare.

There are a great many varieties of the potato, arising from soil, culture, and other circumstances, but even in the same soil, and under exactly similar circumstances, there are few plants which exhibit such endless diversities as this one, especially in the size, form, and colour of the tubers. It will be sufficient to mention a few of these varieties.

The Spanish or *White Kidney*, is an oblong flat potato, of a yellowish hue when boiled; dry or mealy, and of an early sort.

The Wicklow Banger, is a very long flat root, with very few eyes, and those scarcely sunk in the surface, with a rose-coloured spot on one end and sometimes on the side; an early kind much esteemed in Ireland.

English white, or *London lady*, a smooth fair potato, generally flat, at first watery but afterwards dry and mealy,

The White Eye, a large round root, of a red colour, with the eye sunk very deep in the white blotches; a productive kind and moderately dry.

There are other varieties of a deep purple colour, and of a bright red or mottled appearance.

All these varieties are produced from sowing the seeds.

Potato plants raised from seeds do not blossom for the first three years, nor are the potatoes fit for use until replanted for two or three years, unless care be taken to sow the seeds in rich ground in small drills, and afterwards transplant the shoots and frequently hoe them.

It is perhaps of advantage thus occasionally to raise potatoes from seed in order to obtain fresh tubers and new varieties. But if care be taken to change the soil of the tubers every other year, that is, to procure seed potatoes from a distant and different locality, the healthy perfection of the plants may be indefinitely prolonged.

With regard to the best soil, the uplands and the lighter grounds are found to be much better adapted than rich and strong lands to the cultivation of the potato. This root has one great advantage over all grain and leguminous crops, in being perfectly secure against the late rains, which often completely destroy the hopes of the farmer. Rains which have no bad effects upon the potato, injure the bloom upon the cerealia, or cause them and the legumes to run so much to straw as not only to be less productive of seed, but actually to lodge and rot. The quality of the roots is no doubt a little deteriorated by excess of moisture, but when they are sufficiently matured, rain has little or no injurious influence over them.

This plant seems alone to have been wanted to make the agriculture of the British isles complete. Upon the western side, and among the mountains, a grain crop is always precarious, and seldom or never good. Scanty and bad as it is, its culture is also expensive, as, after it has been reaped, it cannot be left in the field to dry, but must be taken wet into barns constructed of wicker-work, for the purpose of obtaining a current of air, and there suspended upon ropes. Such a process is not merely tedious and costly, but absolutely incompatible with the culture of any considerable quantity of grain.

A new soil produces better potatoes than worked land in the highest condition; and ground which is light and spongy, provided it has the advantage of plenty of moisture, which does not stagnate, is better than the strongest lands. The reasons are obvious—the tubers will form with the greater ease according as the resistance is less which the ground offers to their expansion, while so large a quantity of vegetable matter elaborated in so brief a space demands no little supply of humidity. Now, the little patches among mountains are composed of the very best soil for this purpose, being generally a mixture of sand and vegetable matter. Such a soil is readily penetrated throughout by every shower, and yet the water does not stagnate; as a mountainous country near the sea is, in high latitudes, always one in which there are frequent showers, the watering of these mountain patches is precisely that which is most beneficial, and therefore it would be difficult to imagine a soil and climate better fitted for the growth or for producing excellence in the quality of these tuberous roots.

When cultivated in tenacious argillaceous soils, if the summer be dry, the swelling of the tubers is prevented by the mechanical pressure of the earth; and on the other hand, such soils, if constantly in a state of moisture, produce immature tubers, which are sodden, waxy, and otherwise of bad quality. But in ground which to all appearance is little else than loose sand, if there be humidity enough, potatoes will grow and be of excellent quality, and, even should there be any failure in the sufficiency of moisture, the quality of roots yielded by the first planting will be good, but they will be small, and too hard for propagating. In the mountain districts of Scotland the frequent rains in all seasons are of so constant recurrence, that a whole week of dry weather is considered worthy of record. This circumstance, so unfavourable to the maturity of other crops, operating in union with the peculiar nature of the soil, causes the situation to be well adapted to this cultivation; while there are still other advantages on the west coast of the Scottish Highlands, and which apply in a great measure to Ireland. In the first place there is very little frost—never any except in high and comparatively inland places—until the potatoes are come to their proper growth. Again, spade husbandry is best adapted for potatoes, and it is also the best for those places where the acclivities are generally too abrupt, and the spots of land really worth culture too small to admit of the use of the plough with any advantage. Persons who are acquainted with only flat countries, where there is little inequality of soil in a field, and no absolute sterility in a parish, but that which is consequent on neglect, can form but an imperfect idea of the variations witnessed in a little portion of mountain land. In a section of thirty yards there may be ten yards of useless gravel, in which moisture can find no resting place till it be fathoms deep in the ground, ten where there is not above three inches of soil on the bare rock, and ten of soil of the very best quality. The first and second portions would not of course produce a crop of any description, and yet in the use of the plough it would be necessary to pass over them, or to lose about the same time in turning; so that the expense of ploughing such a piece of land would be triple that of ploughing the same extent of a champaign country. On the other hand, when the spade is employed, the culture of the fertile spots is not more expensive than if they were continuous, and situated on the flattest surface in the island: while the nature of the soil renders the labour of turning it and taking up the crop comparatively easy.

Thus the potato has this great and peculiar advantage over all other substantial esculent vegetables, that it can be not only cultivated in places where no others can be profitably grown, but that it can be cultivated there at small expense; while it is less subject to disease, and more secure against degenerating in those situations than on richer lands. Consequently, in a soil so diversified as that of Britain, and where the communication between any two places is so easy, an almost unlimited supply of potatoes may be grown without any diminution of the breadth of profitable crop of the cerealia, the legumes, or indeed of any other useful plant; while this crop is recommended as causing an amelioration rather than an exhaustion of the soil.

The most usual and profitable manner of propagating this vegetable is by putting into the ground the tubers, either whole or divided into as many parts or *sets* as they contain eyes. The sets are planted in lines from twenty to twenty-four inches apart, either in drills or by the dibble, at intervals of from twelve to fifteen inches. The proper season for planting the main crop is from the 1st of April till the middle of May, and a peck of seed potatoes is usually required to plant a bed of twelve feet by thirty-two.

It seems generally admitted, that the cuttings should be made from large but not from overgrown potatoes, and that it is not profitable to plant either small potatoes or small cuttings. A good set, part of a large potato, all other things equal, will naturally produce a stronger and better plant than part of a small potato, the crop being in general proportioned to the weight of the sets. They ought to weigh about two ounces each, and should not be such small cuttings as thrifty managers are so apt to employ. A large cutting gives nourishment to the plant when young, which promotes their future growth. Mr. George Lindly says, "the earliest tubers of the potato are always those which have been produced from sets which have been cut with a single eye to each. This circumstance should be particularly attended to in the first crop, as I have always found these ten days or a fortnight earlier than those produced from sets which had been cut with two or more eyes. I have tried them several years, planting the single-eyed sets in alternate drills with the others, and the difference has proved uniformly the same."

In Lancashire they are convinced that the best plan is to cut off the front or nose end, and also the umbilical or tail end of a large potato, and rejecting both, to take the middle part entire for planting. The common practice of cutting the potato down the middle, from nose to tail, is not to be recommended.

The advantages of large cuttings are satisfactorily proved by an experiment tried by Mr. Whyn Baker, in Ireland. He planted three sorts of cuttings, 1. reasonably large; 2. very small; and 3. very large; the result was,

	Produce.	
	lb.	oz.
1. The reasonably large, or moderate sized, produced	84	3
2. The very small......................	64	12
Difference,	19	7

This, upon an acre, would make a very material difference. The produce of the very large was little or nothing different from the reasonably large or moderate sized.

The mode of managing the sets requires more attention than is commonly paid to it, more especially for early crops. In regard to them, the following is the most approved method in Lancashire. When the sets are cut, they are put on a room-floor, where a strong current of air can be introduced at pleasure, two lays in depth, and covered two inches thick with chaff or sawdust. If desired to be very early, they remain thus from November till March, much attention being paid to give or to exclude air, according to the weather.

If the seed, after being cut, is suffered to lie in a heap, *it will heat*, and it will either be totally destroyed, or at least so weakened as to produce *curled stalks* and a poor crop. Curled stalks will proceed from any other cause which weakens the vegetative power either before sowing or when the plant is in a state of growing; but nothing can more effectually produce it than laying potatoes together in too large quantities, in a wet or damp state. This must occasion repeated sprouting before planting, and perhaps worms may be produced, which, wounding the young shoots, may occasion much mischief.

It is said that a set will not sprout until the cut be healed; and, therefore, if the cutting be performed long enough before the setting to allow time for the cut to heal or dry, so much time will be gained by the planter, which is a great object, especially to the poor, who are late in planting.

The quantity of seed per acre varies from fifteen to thirty bushels; medium about twenty, which is quite enough if the rows are kept at an adequate distance from each other, namely, four feet. Nothing can be more injudicious than the close planting so prevalent in many parts of the kingdom, and more especially in the more northern districts.

Some recommend the plan of planting the entire potato; but the saving of the seed, by cutting large potatoes, is considerable, amounting to 1*l*. 19s. 8d. per statute acre; for it appears, by repeated experiments, that the uncut potatoes required 37½ bushels per acre, and the cut only 20½, making a difference of not less than 17 bushels.

Some years ago a gentleman in Fife tried the following experiment:—He took one of the largest potatoes he could get, and planted it whole in his garden without dung; the produce was seventy-two potatoes in all; about twenty of them were nearly as large as the mother-plant, the remainder of different sizes, gradually decreasing to about the size of a walnut. Next season he planted the whole of that produce also uncut, setting the largest in the front row, the next largest in the second, and so on, diminishing tha size in every row till the last, which was the smallest of all. By this experiment he found not only that the stems of the largest seed were by far the strongest, but their produce was also by far the greatest, none of them producing potatoes larger than their respective seed. From this it would appear that the larger the seed potato, the larger will be the produce. Whether the original potato would have produced an equal weight, had it been cut in three or four sets, he could not say; but unless it would have produced a great deal more, the advantages are certainly in favour of setting them whole, by saving a deal of labour, and occupying a less space of ground.

It is well known that in the spring potatoes shoot out, and that in stirring, moving, or cutting slices, many of these shoots fall off, and are commonly thrown away. They may, however, be preserved and planted with success, instead of cuttings, by which means there is a saving of seed to a certain amount. Although it is highly proper carefully to preserve all the sprouts which can be collected in the sowing season, yet the entire substitution of sprouts in the place of potato-sets can never take place so as entirely to supersede the necessity of planting a considerable quantity of the latter. Every man's experience proves that when sprouts are put forth the potatoes are considerably weakened, and that *that* weakness increases in proportion as sprouts appear, until the potatoes are entirely exhausted, and unfit either for food or seed. The general practice therefore is, to prevent as much as possible potatoes from sprouting at all; and when that cannot be done *effectually*, farmers choose to let the sprouts remain and wither, which they will do by turning the potatoes often, shaking the mould off, and keeping them in a dry state. The withering of the sprouts, it is said, prevents or retards new shoots, by which the potatoes are preserved in a better state for food than if they were encouraged or suffered to put forth many sprouts. But supposing all the sprouts of potatoes which are brought to view during seed time be preserved for seed, yet the quantity of good shoots will fall *far short* of the complement necessary for a general planting, inasmuch as a potato, however large and full of eyes, will not, at the first sprouting, put forth more than *one or two shoots.* It is to be considered also, that the poor people's sowing of potatoes seldom commences until May, and continues but a short time; so that were they to plant nothing but *sprouts*, their stock of potatoes should be much larger, to produce a sufficiency of sprouts, than they generally possess or have occasion for at that season.

Sprouts are fit for planting at any time after they acquire roots sufficient to support themselves, independent of the mother-potatoes, which they generally do when about three inches long. Sprouts may be planted successfully in all the various methods by which potatoes are usually planted; but it is not advisable to have the sprouts *cut in pieces.* It is better to plant them whole, be they ever so long, or have ever so many series of roots and joints. When left whole, they may be planted at greater distances. They answer best when laid *horizontally*, covering them in every instance as potato-sets are treated.

It is said that potatoes, and the sprouts of potatoes, have been planted on the *same day*, and that sprouts came up about three weeks *sooner* than the potatoes. It is likewise maintained that sprouts will produce as good if not better crops than potato-sets, and more seldom fail of growing; so that this branch of the subject still requires additional investigation.*

The young plants are kept free from weeds, and when they are about half a foot or a foot high, some earth is drawn around the lower part of the stem; little or no farther care is required till the taking up of the crop. The plants are suffered to remain until the roots attain to their full growth. This state is indicated by the stalks beginning to decay, which usually takes place at the commencement or latter end of October, when the roots should be dug up for the winter store. Some careful cultivators pinch off the blossoms as they appear on the plant. The good effects of this practice have been very often proved, it being supposed that the weight of the tubers of each plant is increased an ounce in consequence, or considerably above a ton per acre. The cause of this result has been thus explained:—the fluid or sap gives sustenance alike to the tuber and blossom, and, therefore, if a portion be diverted from the formation of the blossom, it will be exerted for the enlargement of the root.

This plant may be propagated also from cuttings or layers of the green shoots; but this is not at all advantageous for any culture, except in some instances, when it is required to multiply as quickly as possible a rare sort.

The tubers obtained from seeds are at first very few and very small, and therefore seed cultivation is by no means advisable to "the grower" of potatoes; but it is of great service to "the breeder," who seeks to improve its quality.

On the other hand, by cultivation from the tubers a good variety may be extended and preserved after it has been once obtained; as the plant from the tuber is not a new plant, like that which is procured by the operations of flowering and seeding, but an identical part of the old one. Though the planting tubers will not lead to any new variety, it may have effects every way as advantageous: for no plant profits more by changes from one district to another.

Besides improvement in quality which a judicious change produces, it likewise often prevents the most destructive disease to which the potato is liable. That disease is known by the technical name of the *curl*, or the *curl-top*, a name by no means inexpressive of the appearance of the plant when under its influence. The top leaves begin to shrink just about the time that the tubers should form, the young shoots cease to expand, and the whole plant assumes very much the appearance of the tip of a cherry twig when the under leaves are assailed by aphides. From the moment in which this disease appears, all farther growth in the plant ceases, and though it may linger in a yellow and sickly state until autumn, the produce, if any, is little, and that little is of a bad quality. If, as soon as the disease shows itself, the tuber which has been planted be taken up, it will be found much firmer and less exhausted than those of the plants of the same age that are in a healthy state. This at the same time points out at least one cause of the disease, and suggests its remedy. The old tuber has been too compact for yielding to the vegetative powers of the plant.

The curl first made its appearance in this country in the year 1764, in Lancashire, where potatoes had been first introduced into British field culture, and had been propagated without any change of seed. From Lancashire this disease spread over all the potato districts of Britain, and as the cause and cure were equally unknown, there was a general apprehension that the plant would be exterminated. Premiums were offered by different agricultural societies to those who should point out a remedy for a disease so destructive; in consequence of which many speculations and theories were raised, which, however, led to very little practical utility.

The discovery of at least a temporary preventive, and therefore of the probable cause, was made, as is believed, more from accident than design, in the neighbourhood of Edinburgh. Some of the growers in that situation were in the habit of procuring seed potatoes from the cold moorland districts, and fields planted with these were free from the curl. Upon inquiry it was found that in those bleak and humid situations the potato crop was so late that the frost came on and blackened the leaves, while they and the stems were still green, and the tubers of course not ripe. The change of climate was therefore not the sole cause of prevention, if indeed it was the cause at all; for when the full ripened potatoes were planted in the moors the curl appeared in them, in situations where there was none in the native potatoes. It was thus found that the curl could be prevented by using tubers that were not quite ripe.

A writer in the *Gardeners' Magazine* for May 1827, thus ingeniously accounts for this fact:—"The potato tuber is a perfect organized system, in which the circulation regularly proceeds, and if suffered to ripen will then tend to decay; but if separated before ripe from the stem or stalk which furnishes it with blood or fruit-sap, descending from the leaves, the circulation of the blood-sap is suddenly arrested. The ripe potato, having performed all its operations, becomes more inert; but the circulation of the sap in the unripe tuber having been stopped, it starts more readily, and with greater vigour, when planted; the one appears to die, worn out with age; the other seems accidentally to have fallen asleep, and when awakened possesses an unspent vigour and energy."—p. 317.

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* Sir John Sinclair on the potato.

That over-ripeness is the principal cause of the disease, has been found by experience to be so much the case, that out of the same potato it is possible to make some sets that will and others that will not produce the curl. The portion of the tuber that is nearest to the cord by which it is fastened to the plant ripens first, as any one may observe, especially in an elongated potato, where the root end is often so mealy as to fall to powder, when the top or thick end is soft and waxy. If such a potato be taken when only the small end is ripe enough to boil mealy, the eyes upon another of the same parcel that are upon the waxy part will all produce sound plants, while curl may appear in those which are taken from the mealy end. The soil and mode of culture may have likewise some effect in producing this evil. Experience has shown that high culture and stimulating manure tend more to produce curl than poorer treatment; that this disease is less frequent in new lands than in those which have been long in culture; and that it seldom appears in cold and upland places.

The following facts, collected by the late Sir J. Sinclair, on this important subject, deserve attention. About the beginning of October, a gentleman took his potatoes out of the ground, put them upon some straw in a vault in the cellar, and covered them with straw on the top, where they were left for the winter. It was impossible for frost to approach them. In the succeeding February a friend requested a few of them to plant. Accordingly, about a bushel were taken from the store, and put in an outhouse in the yard, where they remained for some time, during which there were several severe frosts. It was evident that the frost had affected them; and the gentleman therefore determined to try what effect it would have upon them. They were planted; and the consequence was, that one-half of them had curled leaves, and was not half a crop, Those which remained in the vault until they were planted were not *in the least* disordered. Many other causes may doubtless produce this disorder; but the foregoing experiment clearly demonstrates, *that frost will cause it*, and ought therefore to be most carefully guarded against.

There is reason also to believe, that the frequent application of lime to the soil will occasion this disease, of which the following experiments furnish a strong proof: A piece of ground (deep loam) was well manured with lime, and planted with potatoes. When the plants appeared above ground, nearly three-fourths of them were curled; while at the same time a few drills, immediately adjoining, which had got no lime upon the soil, and planted with the same seed, were entirely free from the distemper. This circumstance attracted notice, and the same experiment was repeated next year, with the same result.

Any cause that weakens the plant must certainly occasion the curl; but there is nothing to which it can be more justly attributed than to the sets lying in heaps in a house, and being suffered to heat before they are planted. On the other hand it has been remarked, that when potatoes, to be used as seed, are kept in pits under ground, and not in a house, the crop is seldom liable to that distemper.

The best means of avoiding the curl is, to change the seed every second or third year, as from moss land to cultivated soil, and *vice versa*. It is a practice of the Lancashire planters to send some of their favourite kinds to the mossy grounds to recover, if they are found to have a tendency to curl; and it is certain that potatoes from mossy lands will not curl. The moor lands in Yorkshire, and the mountains of Radnor and Montgomery, are free from curl, while the vales are infested with it.

It has also been found, that sets taken from young potatoes are not so liable to the curl as those which have been forced to a great size by rich manure and earthing up; and some farmers on purpose sow the potatoes intended for seed later than the rest, that they may not attain great size or maturity.

The economy of this article of food, as compared with wheat, is seldom questioned, although doubts have been raised even as to its comparative cheapness with wheaten bread. The following statement, from Mr. Jacob's Corn Tracts, contains all the facts that can be depended upon for forming an opinion on this question: "If an acre of land, with the same degree of labour bestowed upon it, and the same portion of manure applied to it, yields 300 bushels of potatoes, it may yield 24 bushels of wheat. The food produced by the former, at 38lbs. to the bushel. will then be 11,400lbs. in weight; the food from the latter, at 60lbs. to the bushel, will be 1,400lbs., or the weight of the wheat will be one-eighth that of the potatoes. It is difficult to ascertain the quantity of nutrition in a given quantity of either wheat or potatoes. The chemical experiments of Sir Humphery Davy show that wheat contains about three times the quantity of mucilage or starch, and of gluten or albumen, of what is contained in a like weight of potatoes; but that potatoes contain also about from three to four per cent. of their weight of saccharine matter, in which wheat is deficient, though it abounds in barley. The difficulty of estimating the nutritive power of the two substances is not wholly removed by this appeal to chemistry, because we are still ignorant of the effect which the combination of the saccharine matter with the mucilage and gluten may produce when used as aliment. A small addition of the former to the two latter may communicate to the whole mass a degree of nutritive power very far exceeding its own separate proportion of weight. Some inquiries have been made as to the actual quantity of potatoes consumed per head in families in Ireland, in Prussia, and in Saxony; but the answers varied to such a degree as to be little satisfactory. It does not appear to me to be very far from the fact, if we estimate the proportion of the nutritive power of wheat to that of potatoes, as about seven is to two; or that 2lbs. of wheat afford as much subsistence as 7lbs. of potatoes, though it may be doubtful if it affords as much nourishment. We have seen before that the mean weight of the two kinds of food, from the same extent of land, is nearly as one to eight; and now assume that the consumption of an individual is yearly one quarter, or 480lbs. of wheat, or an equivalent quantity of potatoes being 1680lbs., then one acre of wheat will produce sustenance for three persons, or one acre of potatoes will afford it to six and five-sixths."

The chemical composition of the potato is as follows:—100 parts, deprived of the skin contain:

	Parts.
Water	68 to 72
Starch	17 to 15
Fibrous matter	9 to 8
Extract, or soluble mucilage	6 to 5

There is also a small proportion of potash and of an essential oil.

The farinaceous matter of the potato may be preserved in a dry state by two processes. The one consists in washing the roots well in water, then subjecting them to the temporary action of steam, by which the skins are readily detached, and finally slicing them into thin pieces, drying them, and grinding the whole into a powder. Of this bread may be made by an admixture of wheaten flour or oatmeal. The other method is to grate down the potatoes into a pulp, either by a hand grater, or a machine constructed for the purpose. This pulp is then repeatedly washed with water till the whole of the fibrous and mucilaginous matter is cleared off, and the pure farina or starch remains in a white and insoluble powder at the bottom. If sufficient pains are taken by repeated washings, this farina is of a perfectly pure and unmixed nature, and equal to that procured from wheat or the other farinaceous roots. This starch, mixed in certain proportions with wheaten flour, forms a palatable bread; or it may be used for all purposes for which arrowroot is employed.

Sugar has also been manufactured in France from the potato, and a syrup like treacle. This treacle, says Mr. Jacobs, appeared to me as sweet as any from the tropics, the only perceptible difference between them was, that it had less consistence. By fermentation a kind of spirit may also be distilled from this root.

ON EARLY REAPING OF WHEAT.

[At the request of an estimable country gentleman, a large landed proprietor, and from the seasonableness of the subjoined communication, we have great satisfaction in giving it the currency of our columns.—*Leicester Journal.*]

Every farmer knows that be makes the best prices of his earliest cut wheat, yet very few of them are favourable to the practice of early reaping, from an idea that they lose in measure much more than they gain in quality.

Although long satisfied that the latter was an erroneous opinion, I have never had an opportunity of proving it by a fair trial; but in the last number of the *Quarterly Journal of Agriculture* (No. 53, June, 1841) there is an article "On reaping Wheat," by Mr. Hannam, of North Deighton, Yorkshire, which will go far towards convincing every unprejudiced farmer that it is advantageous to him, as well as to the purchaser and to the consumer, to cut his wheat crop earlier than is his usual practice.

To those who have the opportunity of reading the essay (and many are now enabled to do so through the agency of Farmers' Clubs) I recommend a perusal of it, and would particularly point to Mr. Hannam's admirable remarks in the opening of his article; and for the benefit of those who have no opportunity of seeing the original, I will give a few extracts from it.

Mr. Hannam's attention was drawn to the subject from inspecting the books of a friend "whose agricultural experience extended over a period of more than half a century, and who, when in the active management of land, was *locally noted* for producing good samples of wheat. Observing that the prices he had obtained for wheat were nearly always above those of the neighbouring markets at the same time, he informed me that he was in the habit of commencing harvest a week or ten days before the generality of farmers, it being his practice to reap his wheat before it became quite ripe."

Having determined on giving the system a fair trial, Mr. Hannam selected a field for his experiments, and cut a small portion on the 1st of August, 1841. "At this time (he says) it was quite green, that is, both straw and ears were in full vigour, and full of sap. Though the grain appeared perfectly formed, the chaff still adhered so firmly to it, that it was scarcely possible to separate them by friction in the hands. When separated it was large and plump, but so full of milk that the slightest pressure reduced the whole to a juicy consistency or pulp. This sheaf stood in the field for a fortnight, when it was housed. On the same day, August 18th, I cut another. The wheat was of course yet *green*, speaking positively, or *not ripe*, if we speak negatively—being what farmers commonly term *raw*—that is, the straw, though appearing at a distance green, when examined closely, was of a hue fast approximating to a yellow; while, for a foot upwards from the ground, it was quite yellow. The ears too were more open, the chaff tinged with various shades of yellow and green, and the grain itself, when separated, soft and pulpy, but not near so full of fluid as before. The judgment of the farmer will, however, best tell him the condition of the wheat, both at this and at the preceding cutting, when I say, that in another fortnight the whole field was ripe. At the end of this fortnight (September 1st), I housed the sheaf cut on August 18, and which had remained exposed to the weather in the interval, and cut a third. This I have said was *ripe*, but by the term I don't mean that degree of ripeness when the straw breaks, the ears curl, and the grain shakes out; but that condition in which it is customary to commence reaping it, when the straw from the roots to the ear is uniformly yellow, and has lost all symptoms of vivid health."

"On the 14th of September, the third sheaf was taken from the field and carefully preserved, along with the other two, till the 1st of November, when out of each sheaf I selected a hundred ears and put each parcel into a separate bag. The straw from each of these parcels of ears was preserved carefully."

Before giving the results of this experiment, I may state, that it is open to some objection, from the small quantity upon which the trial was made. It would have been more satisfactory to have selected an acre of wheat, and cut every third ridge at the first reaping—every second ridge at the second period, and the remainder at the last cutting—the gross measure and weight of the produce of each, with the weight of straw, would have been a satisfactory criterion of the advantages of early reaping.

But Mr. Hannam, probably, had not sufficient confidence in the practice to risk the chance of spoiling any considerable portion of his crop. He has promised, however, "to give the subject a trial in the ensuing harvest, on a much more comprehensive scale." But, although the quantities were small, they appear to have been tested against each other with the greatest accuracy and in every possible way. Mr. Hannam says of one part of the experiment, "To avoid error, this was repeated several times," and again, "he retraced step by step his investigations, without any variation in the result." Space will not serve me to give all the calculations, in which the minutest quantities are included, even down to scruples and grains; but I will state as much of the results as will be interesting to the practical farmer.

No 1 represents the first cut Wheat (very green) August 4th.

No. 2 represents the second cut Wheat, (raw) Aug. 18th.

No. 3 represent's the third cut Wheat, (ripe) Sept. 1st.

COMPARATIVE WEIGHT.

	Of the Gross Produce.	Of an equal measure.	Of an equal number of grains.
No. 1	576	568	19¾
2	736	580	23¼
3	650	570	22¾

ACTUAL WEIGHT.

	Of the Gross Produce.				Of an equal measure.				Of an equal number of grains.			
No.	Oz.	drs.	scrp.	grs.	Oz.	drs.	scrp.	grs.	Oz.	drs.	scrp.	grs.
1	4	0	0	0	3	7	1	13	0	1	0	5¾
2	5	0	2	13	4	0	0	13	0	1	0	17½
3	4	4	0	6	3	7	2	0	0	1	0	15¾

To work out the above, it is necessary to suppose a given quantity of one of the numbers, and then calculate the difference between them. Mr. Hannam supposes that No. 3, or the *ripe* wheat, might yield 30 bushels per acre, and 1 ton of straw. Taking those quantities as the basis of the calculation, No. 1 will yield 26.1356 bushels of wheat, and 195 5-9ths stones of straw; and No. 2, 30.1307 bushels, and 168 stones of straw. As regards value, the three samples were taken to market, and estimated by competent judges, No. 1, at 61s.; No. 2, at 63s. 6d.; and No. 3, at 61s. 6d. per quarter; the first was a good clear sample, but much smaller than either of the others; the second was bold and very fine and thin skinned; the third was also bold, but coarse, feeling rough in the hand. The straw of each was taken at an equal value, viz., 1s. 2d. per stone; but I have omitted to give the comparative weights from which the different quantities per acre were calculated—they were No. 1, 550; No. 2, 475; No. 3, 450.

The total results are as follows:—

	£	s.	d.	£ s. d. per acre.
No. 1. 26.1350 bushels at 61s......	9	19	3¼	11 11 10¼
195 5-9ths st. straw at 1s. 2d..	1	12	7	
No. 2. 30.1307 bus. at 63s. 6d..........	11	19	1¾	13 7 3½
168 stones at 1s. 2d	1	8	1¾	
No. 3. 30 bus. at 61s. 6d.	11	10	7	12 17 3½
160 stones at 1s. 2d.	1	6	8	

"Showing a loss of 1*l*. 5s. 5d., or about 10 per cent. by cutting very green; and a gain of 10s. per acre, or nearly 4 per cent. by reaping in a raw state, or a fortnight before it was ripe."

I confess that the gain of 4 per cent. is not equal to what I had anticipated; and I think that further experiments on a larger scale, will show a larger increase. I have been accustomed for many years to cut a sheaf of wheat a fortnight before the field appeared ripe, and another a week before, and I have always been surprised to find the quality of even the first reaped sheaf so good. This year I cut one on the 31st ult., in a field of mixed red and white wheat, both of which were then perfectly green. I shall cut another to-morrow (7th inst.), and probably commence reaping the field on the 16th. I will test them in the same way Mr. Hannam did, and report the result at a future time.

But there are other advantages attending early reaping of wheat, not estimated in the above calculation, viz., the better quality of the straw, a better chance of securing the crop, and a saving in securing it. These will be obvious to every farmer; and the last in particular is an important consideration, and one which would materially increase the gain of 4 per cent. in Mr. Hannam's experiment. If the first field of wheat be not reaped till it is ripe, what becomes of the last? We all know that a considerable quantity is shaken out and lost in the field. Again, early cut wheat will bear more rain with less injury, than that which stands till it is ripe—the cosh is less opened, and the grain, of course, better protected from the weather.

I think this is a season peculiarly requiring early reaping—the straw at present is very green, owing to the continued moisture and want of sun; but I imagine that the grain has already taken up all the sap necessary for its perfect formation, and that, in the absence of natural heat to check a further supply of this food to the kernel, it will be wise to prevent this artificially by early cutting. It is clear that had we experienced fine dry weather during the last fortnight, much wheat would have been already reaped; the kernel was in a sufficiently forward state to be dried at that time, but the continued moisture forces a fresh supply of sap, and prevents the straw from drying and the kernel from becoming hard. I know not if this hypothesis be sound—I advance it as an opinion only, and think it at least worthy of the trial I intend to give it.

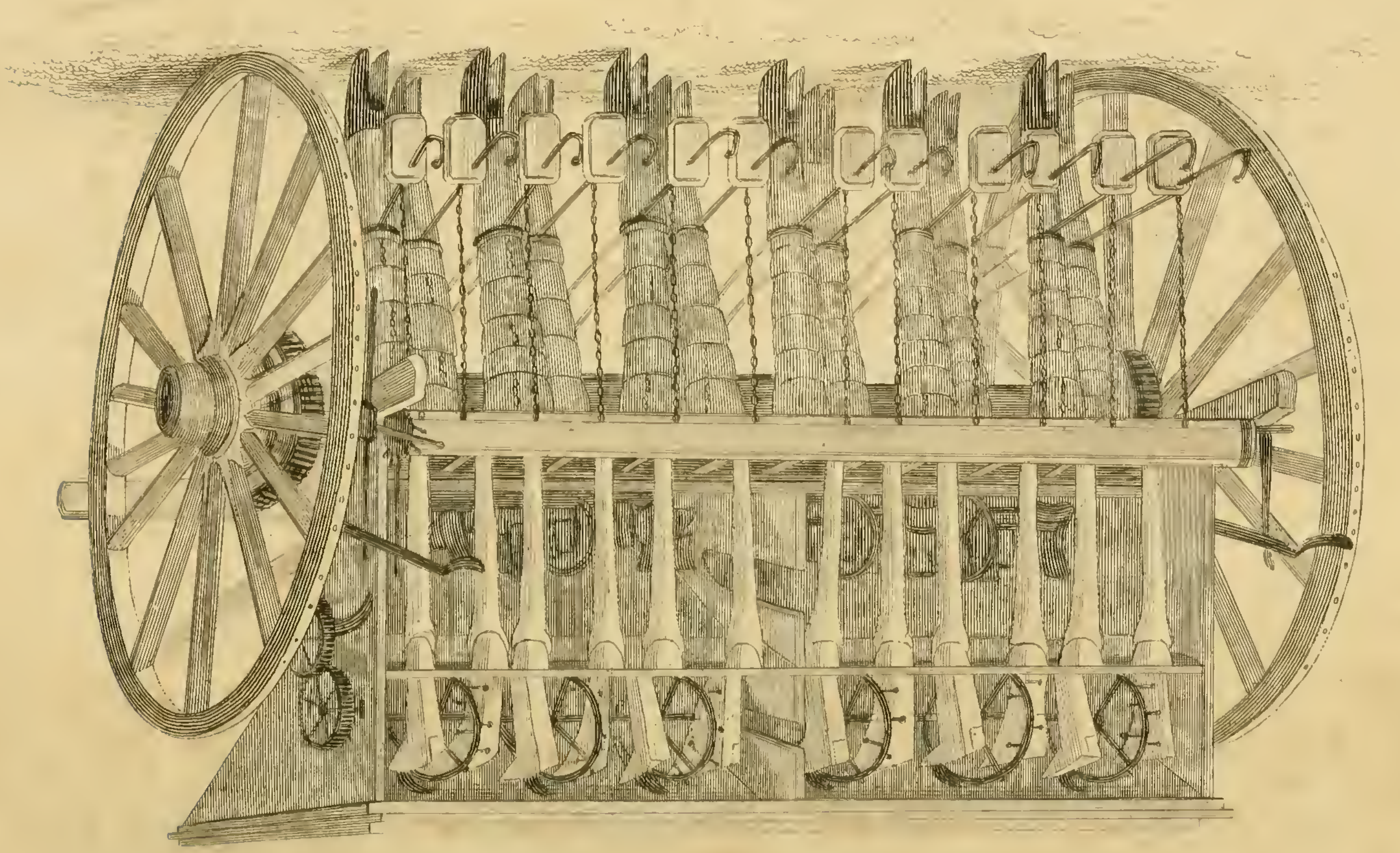
RUSTICUS.

DROP DRILL.

(PLATE II.)

A prize of twenty-five sovereigns for the best drill for general purposes, was awarded by the Royal Agricultural Society of England, at the Liverpool meeting, to R. Hornsby, Spittlegate, Grantham, Lincolnshire. This drill, fitted for general purposes, of which we give a Plate, will deposit accurately upon hilly or level lands in cultivation any description of pulverized manures, from 6 bush. to 200 bush. per acre; and any quantity of corn, from 4 pecks to 26 pecks per acre; and seed, from 1 to 12lbs. per acre. The corn and manure, or the seed and manure, may be deposited together down the large coulter; or the corn and seed may be deposited through a separate coulter behind the manure coulter at the top of the manure, or as deep as the manure if required. This implement is still more complete, having a stirrer in the manure part on an entirely new principle—simple in its construction, and certain in effecting the more accurate delivery of very damp ashes and other manures difficult to deposit—rendering the attendance of a man to stir the manure, as is the common practice with other drills, unnecessary. The stirrer has the rotatory motion in common use, and the traversing motion worked by an endless screw. By this invention, the points in the stirrer always keep changing their places as they revolve round, so that by one point or other the whole line of the box is traversed, and the damp manures brought down to the barrel for delivery. This implement is fitted also as a complete drop drill; can be used with 5 drop coulters, at 15 in.; 4 do at 19 in.; 3 do at 25 in. apart on flat ground; and with 3 drop coulters upon ridges, varying from 24 to 26 inches apart. Each coulter will make 150 drops per minute, and when depositing about 40 bush. of manure per acre, and dropping at 12 inches in the row, will leave a space of 8 to 9 inches free from either seed or manure; a much larger quantity of manure can be dropped if required. When 5 drop coulters are in work, it will make 36,000 drops, and complete an acre in 1 hour, and from 10 to 15 minutes; the whole making a complete, but not complicated drill: any common labourer can use it.

It is a corn and manure drill—a turnip drill for either flat or ridge work—a common corn drill, or a complete drop drill.



ON THE BEST MODE OF STORING TURNIPS.

BY W. E. GEACH, TYWARDREATH, NEAR LOSTWITHIEL, CORNWALL.

(PRIZE ESSAY.)

(From the Journal of the Royal Agricultural Society of England.)

Every day's experience more clearly shows the advantages derived from improved and better systems of management in agriculture, as well as in the other arts. Prejudices may exist against new systems on their first introduction, yet none are more willing to adopt them when proved by practice than the sons of the soil.

To abolish, indeed, ancient customs in the practice of husbandry, for the adoption of others, as yet only on trial, would be rash; but caution on the other hand may be carried too far. It cannot be doubted that, if the course of husbandry which our forefathers pursued were still universally practised, the wants of an increasing population would be but inadequately provided for: they, however, considered that their systems were good, and that the course they pursued could receive little or no improvement; and we again, with the same limited vision, are led to believe that we have also arrived almost at the point of perfection in agricultural art; but what farmer in the past century would have believed had he been told that the population, which has since that distant period nearly doubled, could be provided for by an improved system of husbandry on the same land he then partly cultivated; that cattle would one day be fattened on those arable farms where fodder was then scarcely to be grown in sufficient quantities to support the animals required to perform the ordinary labours thereon, and that large stores of turnips would be provided for their winter's use on those farms?—yet we have lived to see these and many other equally great improvements carried into effect, and have enjoyed a share in the advantages. Our farms are now, through the cultivation of the turnip, well supplied with provender and with cattle to eat it, and the demand for well-fed beasts has also increased in proportion to the quantity fattened.

That the growth of the turnip is of considerable advantage to the farmer must be obvious to all, particularly where it is practised on those thin lands that are to be found in all hilly counties. The system usually practised, before its introduction, of growing two white crops in succession, has now become of little profit to the farmer; indeed it has been found that on some soils, without an intermediate crop of turnips, little or no corn can be grown. On some farms in the hilly districts of the western counties, particularly those bordering on the sea-coast, scarcely any pasture-lands are to be found, consequently but few cattle were reared, and fewer fattened; the principal part of the land was sown with corn, and produced large quantities of straw, which, before the growth of the turnip was practised to any considerable extent, was thrown in large masses into the lanes and farm-yards to rot for manure; but now on these farms, and on many others where a head of cattle was but seldom, or perhaps never, fed, are to be seen during the winter months large stores of turnips that have been taken in the autumn and winter months from the lands which either have been sown to wheat or thereby prepared for a barley crop, and the cattle, which are partially fed on the moorlands during the summer, are bought up by the farmer of the arable lands, and thus by means of the turnip are "finished out" and in a proper state for the butcher in the spring of the year, and the straw, which formerly would have been rotted as described, has been converted into a valuable manure. It is then by this method that the farmer has been enabled not only to turn out a large stock of fat cattle in the spring, but also, by having at his command a greater supply of more valuable manure of his own making without additional cost, to effect an improvement of the soil, and to grow a larger quantity of the necessaries of life, in order to supply the wants of an increasing population.

That so valuable a root, conferring such benefits on the land, and through the land to the public, should have caused the attention of the Agricultural Society to be directed to the best means of storing it during the winter months, has prompted me to make these preliminary observations by way of introduction to some remarks on the question proposed; and although they will appear in the author's "rustic style," not much in the shape of an essay, he having no such pretensions, being a farmer, not an essayist, he feels assured that, although his observations may not present to the Society much original matter, they are derived from careful observation and practical experience, and that they will receive from so practical a body before whom they will appear, and by whom they will be tested, whatever share of attention they may be found to deserve.

Under these impressions the author has broken a barrier which he, in common with many others amongst his brother farmers, had hitherto considered as almost insurmountable, that if severe criticism, which now, under the favourable auspices of the Society, they need no longer fear, but may with confidence commit their thoughts and experience to paper for the benefit of those engaged in the pursuits of agriculture.

The preservation of the turnip during the winter months has no doubt engaged the attention of the farmer in most counties, therefore it cannot be doubted but that there are many plans in operation for the purpose of effecting so desirable an object. Like many others, I was induced to try the experiment; and by repeated trials have succeeded in effecting it in a useful and economical manner. At first, by way of trial, the produce of a small field was taken up in November and carefully carted from the field to the farm-yard, and there placed in a spare house, which appeared to be well adapted for the purpose; all light was excluded, and as much air as possible. In the March following I commenced using the turnips, and found that on the top part of the pile they had vegetated about three or four inches in length, but towards the central part of the heap the shoot was much longer and more delicate and slender, owing, as I conjectured, to the small space through which it had to make its way between the turnips to the surface of the pile: on arriving at the bottom I found that they had not vegetated, indeed, but that, through the confined state of the air, the greater part were decayed and of no use whatever as food for cattle. The following year a different method was adopted, which, having been practised by a neighbour with success, held forth prospects of a different nature from those of the preceding year. The turnips were taken up as before in the month of November, and were carted to the rick-yard or mowbay, and emptied out on the surface of the ground and formed into a pile about seven feet wide at the base, and terminating with a sharp top, resembling a triangle standing on its base: the piles were made of such length as the place admitted, and were covered with straw about four inches thick, and secured by ropes placed longitudinally, with others across, intersecting each other at right angles, and fastened to pins of wood driven into the ground. In the March and April following they were opened, and the turnips were in a tolerably perfect state; vegetation had not made such rapid progress as in the former year, and comparatively but few were decayed. Although this plan proved far superior to that of housing, yet the expense and labour of thatching proved too great, and on small farms, where thatched buildings are still unfortunately standing, the straw alone would be an object of serious consideration. The idea occurred to me that, by making the piles much higher on the same base, having their sides supported by stakes driven into the ground, a much larger quantity could be secured on the same piece of ground and with the same quantity of covering. Having in one part of the rick-yard the back of a garden-wall, which would answer the purpose of one side, a line of stakes was driven into the ground parallel with the wall, and about four feet from it, and three feet high above the surface of the ground; the stakes were woven together with twigs of wood and furze, and between them and the wall the turnips were placed to the height of the stakes in front, and so much higher against the wall as to admit of being covered in a lean-to position; they were thatched with straw about four inches thick, and secured by ropes of the same material, which were fastened by *spears*, whose points were thrust into the turnips. On opening them in the spring those nearest the stakes had pushed forth a little short shoot of a greenish colour; further in, the shoot was more bleached and still longer; whilst close to the wall the shoot was still longer and more slender; at the bottom nearest the wall, at the greatest depth from the surface, where no air could circulate, a large quantity came out quite rotten.

Having now ascertained that it mattered not how high the piles might be made, so long as they admitted a free circulation of air, and that the saving in reed by this method would be considerable, I considered that by a little improvement the plan would ultimately prove of great advantage over any other mode of storing. Accordingly, the following year a piece of ground was selected for the purpose, and two lines of stakes were driven into the ground about two-and-a-half feet high above the surface and six feet apart in the rows: the stakes were wattled as before on both sides and at one end, the other end being left open for the purpose of backing the carts to empty the turnips into their proper position; the space between the two rows of stakes was thus filled up, and the top sharpened up, in the same manner as before described. Close alongside another enclosure was made, leaving only room to pass between them, and as many more as were required. To prevent the water that falls from the roof from running under the piles, drains were cut between each, which effectually carried it off. As usual, in the following spring they were opened for use, when the turnips were in a more perfect state than any stored in the manner before described; vegetation had made but little progress, the length of the shoot was not near so long as from those in the pile made against the garden wall, and scarcely any rotten turnips were found; indeed the expectations which were formed were more than satisfactorily realised. This mode has been continued ever since, and continues to prove equally successful; its advantages over any other are many, particularly where room is rather limited in the rick-yard, for one pile of this description will contain three times as much as one of those placed on the ground of a triangular shape; the saving in thatch is also considerable, and there is the still greater advantage of having turnips well preserved until the months of April and May, and even June, until which latter month I have seen the cattle eat them with eagerness.

Some objections may possibly be raised against the system, particularly in districts where stakes and brushwood and furze are but seldom found in sufficient quantities; but this difficulty can easily be overcome by the use of hurdles made of the required height, and used instead, which could be removed and housed for another year as the turnips are consumed. Other methods have been practised by me, but to no great extent, and most of these have given place to those already described, particularly to the two last. A description of one or two other plans may not, however, be considered out of place.

On the first introduction into the neighbourhood of storing turnips, some farmers had a dislike to the loss of the top and root of the turnip, of which it was necessarily deprived before it can be placed in the stores: they adopted the following plan.—The turnips were taken up and carted in their entire state from the field to some convenient meadow or part of a field near the farm-yard, and there placed close to each other on the surface of the land, just in the same state as when growing; this they called "pitching." The white and yellow turnips that I saw pitched had grown in strong land, and their tops were luxuriant, which for want of the usual support drooped and died, and having rotted adhered to the turnip, which was consequently refused by the cattle. One chief advantage, too, of storing, namely, the having turnips in a fit state for the cattle during all weather in the winter months, and particularly during a continuance of snow and frost, cannot be effected by that mode; nor can placing them on the surface of the land after their removal from their original position, add anything to their size, whilst the weight will be diminished; for the top, which has been so anxiously preserved, proves injurious to the root, since young shoots of a considerable length which are pushed forth without deriving from the soil a corresponding degree of nourishment, must diminish the substance of the root.

A neighbour of mine put some of his turnips in pits, which he dug about eighteen inches deep and about six feet in width; the turnips were filled in the pit to the surface of the ground, built up to a ridge, and thatched with straw about three inches in thickness, over which was placed the soil that came out of the pit and more from the adjoining ground, so as to put on a layer about six inches thick. In the spring, when they were opened, the turnips were not in a better state than those in the other piles adjoining; they were, for want of air, in rather a moist state, and at the bottom many were quite rotten, owing to the drainage from the surface. The labour required by this method is greater than in any other described; besides, the rick-yard not generally having a sufficient depth of soil for the pits, some field must be resorted to for the purpose, which will necessarily be further off from the farm-yard, and consequently be more expensive for removing the turnips to the houses in which the cattle are fed.

Having thus far observed the different modes of storing the turnip, it will also be necessary to consider the covering best adapted to preserve them when stored from the action of the elements. In Cornwall and Devon, where the greater part of the wheat-stalks are made into reed, that is the principal article of covering. It is laid on in a temporary manner about four inches in thickness, and is secured by ropes spun from the same material, and placed across the reed and fastened with short spears made of wood and twisted near the centre, and thus forming two points between which the rope is taken, the spear being thrust into the turnip, or by placing ropes longitudinally across the reed, over which other ropes are placed in a transverse direction, intersecting the longitudinal ones at right angles, and the ends fastened to the sides of the pile, or to stakes driven into the ground. As the turnips are consumed, the covering is applied to the purposes of making manure.

The various sorts of turnip, like most other substances of the vegetable kingdom, appear naturally disposed to decay in proportion to the time they occupy in arriving at maturity. The white turnip, which grows fastest of all, is soonest past for use; although it does not rot as some other sorts do, yet its tendency to get spongy is equally bad, for so soon as it has acquired that defect it is refused by the cattle. The green is very little better, and is but seldom grown with us, being considered inferior to the white; these sorts do not answer well for storing, except for a short time. The yellow is far superior to either, and will keep well for some time; they ought not to be kept after February, for they then become spongy like the whites, and are refused by the cattle after that period, whilst the Swede, from its solid substance and the close texture of the rind, resists the action of the air for a much longer period, and by being stored in the manner described and recommended will keep until the months of May or June, in which last month the writer has seen them sought after by the cattle and eaten with avidity.

The system which has been in use for taking up the turnips and removing them from the ground has undergone but little alteration since it was first introduced.

The sowing of the seed in raised drills is but little practised here. The ground, after having been well manured, is ploughed down and well worked, and thereby brought into a sufficient state to receive seed; the drill deposits it into little furrows which it makes in its progress, the seed is covered with a brush made with the tops of wood fixed into a hurdle, which is drawn close after the drill, and in the same direction. In the autumn, when the turnips are to be removed from the land, they are drawn in the following manner. A man takes three rows of turnips, which he draws and places on the ground just where they grew; two other men, one on either side of the fore man, follow close after, each drawing his three rows, and placing them on the row already made by the man who precedes them; by this means nine rows are placed in one, which, being continued throughout the field, leaves about nine feet of clear space; in that space the carts pass, and the turnips after being topped and bottomed are thrown into them and carted to the place prepared for their reception.

The manner of cleaning the turnip is simple, and is performed by women and boys, each being supplied with a knife about a foot long and two inches in breadth; they take the turnip by the top, and carefully paring off all the side shoots, remove the tap root at one cut in an oblique direction; by then taking the turnip in the hand they cut off the top in the same manner, taking care not to cut either the tap root or the top too near the bulb, for by so doing it is very apt to rot. I have frequently observed that most of the turnips which have rotted in the caves or piles, have been those the roots and tops of which have either been cut off too close to the bulb, or removed in a careless manner, by cutting or rather breaking them off at right angles, which often bruises the part, and appears to cause its decay from the injury thus received.

The tops and roots are either eaten on the ground, or removed to another field for that purpose, as may be most convenient; if the land is about to be ploughed down for wheat, and the weather is dry, the former is generally practised, for by consuming it on the land the cattle by treading the ground render it firmer and in a better state for a wheat crop, particularly in some parts of Devon and Cornwall, where the soil is of a light loose nature, lying on a subsoil of granite or light killas. These modes of storing and cleaning having answered beyond my expectations, I have no desire to adopt others in their place, nor to recommend new ones, feeling assured that, if those recommended be carried into practice by the farmer, he will also feel satisfied with the results.

THE ROYAL AGRICULTURAL SOCIETY.

Sir,—Knowing the deep interest you take in agricultural affairs generally—but more particularly those of the Royal Agricultural Society of England—I beg to address a few lines to you on the subject of the late meeting in Liverpool. I attended that meeting, and on entering the show-yard on Thursday, I was struck with the magnificence of the scene—the great number of gentlemen and highly respectable yeomen from all parts of the kingdom, anxiously inspecting the beautiful cattle, sheep, implements, &c., &c.—created in me a sensation which I shall never forget, and I at once felt proud of my situation in life, and of being a member of the Royal Agricultural Society of England. After viewing the pigs and sheep, first, second, and third classes of cattle (which I should imagine could not be surpassed in the world), I came to the fourth class; and judge of my surprise when I found that the premium in this class for the best cow in *milk* was awarded to a small cow, called a Wyersdale Cow, without any *milk*, or appearance of milk about her; and that the second premium for this class was awarded to a Sussex cow, also without any appearance of milk; and between the two stood a fine three years and five months old white cow, of a Yorkshire cross, with a beautiful *bag*, and as much like a milker as any cow I ever saw, without any reward at all. My first impression was, that it was a mistake of the judges, but was soon convinced of my error, or the mistake would have been rectified.

My object in writing this letter is not to find fault with the decision of the judges; indeed, so far from this, I think they have a very arduous task to perform, and that we ought to be exceedingly obliged to gentlemen who, at considerable personal inconvenience, will act as judges, and devote so much of their time to the interests of these societies: all I wish to know is, whether the society considers *milk* of any importance at all; and if so, why the judges have not instructions to attend to the milking properties of this class of stock—particularly when their meetings, as of late, are held in dairy districts.

With due deference to the opinions of those gentlemen who were the great promoters of this national society, and to whom the farmers of the United Kingdom are deeply indebted for this great undertaking, I must say that, in my opinion, the dairy produce of this populous country is not the *least* important branch of agriculture; and that the milking properties of the fourth class in particular should not be overlooked.

I am, sir, yours respectfully,

July 30. A Cheshire Farmer.

ON SOWING WHEAT.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—As the time is fast approaching for putting into the land the seed of that most important of crops—"wheat," I think it very desirable that we should have a more enlarged discussion on the merits of thick and thin sowing, narrow and wide drilling; for in looking over your valuable magazine for the past year or two, I cannot find, according to my humble opinion, one fair trial to test the merits of either system, except your readers consider the trial as to dibbling made by Mr. W. Lucas, and reported in your June number, to be one. It is certainly a strong argument for drilling it thin in the rows. I am quite of his opinion, that the more single a plant stands the more productive it will be. Perhaps some of your readers may say, that if the plant of wheat stands thin it will tiller to a much greater extent. Now this is just what I want it to do; for I maintain that if the land is in a good state of cultivation, the tillering crops will produce the strongest straw, with the largest ear, and will ultimately prove the most productive. I will give you one example: the golden drop wheat has been one of the most productive red wheats we have had in our neighbourhood for some time, and I consider the principal reason to be that it is a large-kernelled wheat, therefore seeds thin; and certainly no variety of wheat that we grow tillers to an equal extent. It is stated by some gentleman, in one of your numbers—Lord Western, if I mistake not—that the tillering crops will have the most underling ears: this is quite contrary to my experience. I have been an advocate for wide drilling and thin sowing for several years—that is, the rows nine inches asunder, with eight to ten pecks of seed per acre, according to the state of the land; the latter quantity only in wet unpropitious seasons, or when I sow very late, which is sometimes the case after Swedish turnips or coleseed eaten off, and is considered good management by many on our stiff soils; we then follow with beans and wheat. I will here mention that in numbers of cases when I have only drilled ten pecks per acre, at harvest time any experienced observer would say, this is a fine crop in appearance, but there are so many underling ears, and the others are so small, that it cannot produce corn in proportion to the straw; these crops have looked gay and well all winter, but it has, as we say, spent itself, and the land is not able to carry it through; and in the autumn the straw, though thick on the land, is weak, and the heads also small and dwindling. It was partly from observation, and partly from an accidental circumstance, that first caused me to pursue my present method. I had frequently noticed my clover-land wheats to be very thin early in the spring, principally through being eaten off by the slugs, but as the spring advanced they began to throw out offshoots, and at harvest time proved the most productive crops. I generally drilled ten pecks per acre, at seven and a half inches asunder, at this time, which is ten to fifteen years since; these repeated circumstances coming before me, I resolved to try what less seed would produce. The result proved most satisfactory. About this time my Suffolk drill with ten coulters, covering thirteen feet at a round, happened to get one of the coulters broken, and we went on with nine, making eighteen rows on the thirteen feet lands; this also proved most satisfactory, both as to the appearance of the crops and yield. For these reasons I have continued the system ever since that time.

Some persons who farm high are fond of giving us a full statement of their produce; but I, as a tenant farmer, object to that plan; not that a large landed proprietor who understands the practical part of his business would take any undue advantage, because his tenant manages his farm rather better than his neighbours, and therefore produced extraordinary crops in some cases, but because there is a certain class of landlords who do not know when they have got a spirited, good tenant, for by their proceedings they have proved themselves to be of that class. I hope they are but few, but I have heard of a few instances, that because a tenant happened to produce rather more corn, or that his stock was superior to what the landlord thought the land would produce, his rent has been raised. I own such cases are a disgrace to those who practise them. If a tenant manages his farm high, or keeps his stock extra well, it is not all profit, it requires a good deal of extra capital, and he ought to be remunerated for his industry and skill. Certainly these are the best class of tenants for the landlords, for they will every year keep improving the land, and ultimately make it of much more value. These are the reasons, sir, that I object to the plan, and not only so, but I think if a farmer gives a correct statement of the difference in yield on his various trials, it will answer every purpose required.

I hope some practical farmers will make fair trials during the coming seed time, and give the results in some future number of your magazine. I would here suggest, with all due deference to Lord Western, that thick drilling in wide spaces, appears to me so contrary to nature that I cannot think it a good system. I drill wide because I think it allows the sun and atmosphere to have a more powerful effect on the land, thereby invigorating the roots and strengthening the plants.

I should recommend trials to be made on the following plans, and as I am an advocate for what some people term wide drilling, I will commence with nine inches, though I am not certain that one piece of mine drilled ten inches with eight pecks of seed per acre will not be my most productive crop, for the ears are splendid—but I have named nine inches as most applicable for general purposes. I should say, try it with eight, ten, and, if you please, twelve pecks; again, by the side of it try at seven inches, with the same quantities of seed; then I would try nine inches with eight pecks of seed, eight inches with nine pecks, and seven inches with ten pecks, &c., with as many more as you please. I think this will be the only way to give a fair trial. If you are determined to sow a large quantity of seed, I cannot think it advisable to crowd it together in wide drills. My opinion is that three bushels is too much for any land. I am aware, sir, that my practice is at variance with the opinion of several in my own neighbourhood; but, sir, I am open to conviction, and if I find my crops are deficient to those around me, I shall be very ready to fall into their system. I own my opinion is the contrary to this, and that they will fall into my system; for we do not know what the farmer's clubs may do—ours is only in its infancy at present.

My opinion is, that it becomes every man who is a well-wisher to his country to give all the practical information he can to his fellow subjects, for after all there is no theory to equal practice. My desire is to teach and be taught, and I trust no one will take upon himself to say that there is no improvement to be made in any of his systems. I conclude by wishing that every one may try to do all the good he can; for if by superior management he can only increase his yield one bushel per acre, it will be a public benefit, much more so four bushels per acre, which I think most land is capable of doing.

I am, Sir, your obedient servant,

S. L.

Lincolnshire, Holland, July 22, 1841.

DIRECTIONS FOR THE PREPARATION OF MANURE.

As a carpenter is known by his chips, so is a farmer by his dunghill. Dung is the farmer's magic wand: making manure is the foundation of all good agriculture; and he who has the honest ambition of being a good farmer, will give every attention to the making and collecting manure, as the first and most essential step in any system. The following plain directions, if followed, will add considerably to what is in truth, the farmer's wealth—his dunghill. It would be said, all who deserve the name of farmers know, at least, how to make dung; but the contrary is the fact; scarcely any one knows anything on the subject, either in theory or practice. Make up your straw daily, as it is thrashed into stacks; and when you have a quantity, make it up in large ricks and thatch it as carefully as you do hay. Never waste any straw, or allow it to be spread about the yard, or on the road; it would be far better to plough it into the ground dry. One load of dung made now as directed, is worth five made of straw wet and rotted with rain, of which the principal beneficial qualities are lost and washed away. Keep your cattle as much as possible in the house, winter and summer; your horses always: your cows should be in stall the entire day, from the first of May until the first of November, and at night the other months in the year. Let all have a plenty of bedding. Where sand is to be had, lay always a thick layer first on the floor, and especially fill the channels; then cover with a good bed of straw. Turf mould dry, is still better than sand. If neither can be had in quantity, there is no place where one or other cannot be got to lay in the channels, and soak up the urine. Clean out the house at least every second day—put back into the stalls any that is not wet; the stables should be cleaned every day, morning and evening. Once a week throw water on the floors and sweep them out clean, and sprinkle with powdered lime. If this is done every day in the stables it will destroy every unpleasant smell, and prevent that volatile salt so injurious to the sight of horses. It is a healthy, a cleanly, and a profitable practice. Make your dunghill as follows.—First, make a platform of earth in some roomy vacant place—turf mould is far better, one foot or more high, and twelve feet wide; you can add to the length as you want—throw the dung on this platform, say a foot thick; then cover with earth or turf mould; a thin layer of sand on this earth; some earth on that, and then a layer of dung. Again, continue making your dung in the same manner every day all the year round. A foot of dung, covered at once with six or eight inches of sand or turf mould, better than both. Bring out the dung as soon as cleaned from the houses. If your hurry is so great that you cannot do so, cover it there at once with earth. Go on raising the heap as long as dung can be thrown up with shovels, but never let cart or wheels go on your dunghill. When at its height, cover the sides with sods and mould, or earth packed close; then add to the length of your platform, and go on. It would facilitate your spring work if your dung heaps were in different places in your fields. It is a wasteful system, and a dirty slovenly practice, to throw dung out of the cow-house and stable door, and leave it there to be dried up in summer, all the fertilizing gases to evaporate, and contaminate the air you breathe; or, in winter, the enriching qualities to be wasted away and destroyed by the rain, or deadened by a superabundance of cold water. It is a dirty, barbarous, beastly practice, making dung in the farm yard near your house; the air becomes unwholesome—the house cannot be kept clean. Dung is brought in on the shoes and clothes, and the health of the family injured; the sight and the smell are injured and offended. Your yard should always be kept clean, and swept once a week, at least, with a broom. By having a pit at the lower end of your yard, and as far from the house as you can, made water-tight, and throwing into it all the slops, the water running from the weekly washing of the cattle-houses, with soap-suds, &c., and throwing in earth, sods, and weeds, which have not formed their seeds, refuse, straw, &c., they will be good dung in a fortnight; and what is now wasted and now a nuisance, will add to the quantity and quality of your dunghill. Keep your sheep in a house or yard at night, put sand or litter under them; their manure is well known to be most stimulant. Pigs ought always to be kept in a yard—their dung is the best; they should be well littered, and their houses often cleaned. If you manage in this manner, you may be sure of having more manure than you will want. Provided your cattle are abundantly fed, you may be certain of having enough of manure for one acre from each horse or cow, and from every six sheep and six pigs. The weeds will be out before they shed their seed, and will soon be eradicated from your land; and those matters which before were useless and injurious will come out of the pit, once a fortnight, of much value. The earth put in the bottom of the dung, and in the alternate layers, if not trampled on, will imbibe the juices and fertilizing gases, and will prevent the dung heating too much, and consuming both quantity and quality. Dung put out from the houses, and treated as now directed, will diminish very little in quality; but without the foundation of earth and the alternate layers, a horse load of fresh dung will heat and consume itself to less than a wheelbarrowful, and its best qualities be lost. Cattle should always be well fed, if it were only for the increase of the dunghill; the dung of well-fed beasts is much more enriching to the land than that of half-fed; the dung of carnivorous animals is better than that of those fed on vegetables—an additional proof that half stock is whole profit, whole stock half profit. By giving every animal plenty of litter, or keeping his stall clean, it will tend greatly to increase the dunghill. You know that cleaning is half feeding. A gentleman who followed the old system of manure making, or rather manure neglecting, had every year to buy manure, and draw it at a heavy expense; he adopted the plan you are advised to follow, and though he has not increased his stock, he has now plenty of manure for all purposes, and some to spare for top-dressing meadows: every one who has adopted the system has found great benefit. Lime is a valuable assistant, but not alone. Lime spread when in powder on a field well ploughed will greatly improve the quality of the soil, increase the corn crop, and improve the quality of the grasses. Forty barrels per English acre is a sufficient quantity, or two dressings at an interval of five years of thirty barrels per acre, are perhaps better. Lime mixed with old banks, cleaning of ponds, and spread on lay land intended to be broken up, will greatly improve the subsequent crops. Lime destroys all sourness or acidity: put a piece of lime into vinegar—it will take away all sour taste. In like manner it will sweeten the herbage. Lime marl, found in many parts of Ireland, is an equally valuable dressing. Sea sand acts in the same manner. They are all valuable as helps; but they are injurious if dung is not applied to the green crop; they stimulate the action of the land too much—they destroy the vegetable, and bring it into immediate action. Hence its great benefit in old lay land. Our weed is known to be a most beneficial manure; the best way to use it is after the potato crop has been well dunged, as soon as the stalks are coming up, to spread it on the ground and cover with the plough, when first earthing. Malt-dust is equally valuable, but good only for one crop. It might be beneficially applied in the same manner recommended for our weed; it forces great crops of hay, and would most probably, if sown after the turnip or mangel wurzel, increase the crop, if first well dunged. Bone-dust has been proved to be a highly valuable manure for the turnip crop—all agree that it is better when, being mixed with earth, it has fermented: there is no reason why it should not be equally effective for mangel wurzel and potatoes. Mr. Dibble's very valuable pamphlet explains its effects, and directs its application. Burnt clay is a good manure for one crop, or a forcing top-dressing for clover and meadow. Its preparation is cheap and simple. Have a good many sods dried—make four or five heaps close to each other—light a few faggots and sticks—when well lighted, cover with more dry sods—and when the fire is well established, then cover well with clay—prevent the fire breaking through the sides by putting up rods. Put clay on the top morning and evening. When the fire comes to the top, the earth gets black; put on only a little at a time, but never let the fire break out at sides or top. At small expense you will have a large heap. This practice is very good on clay and heavy lands, or moor and mountain. Where marl is to be had, it is a very good practice to burn it in this manner.

EXPENSE OF MANURES.

Lime, 40 brls. per acre, first cost ..	1s. 0d. per brl.
Sea-sand, 80 horse loads	3s. 0d. a load.
Bone-dust, 25 bushels per acre ..	2s. 8d. a bush.
Malt-dust, 25 bags per acre	3s. 0d. a bag.

Rape-cake half a ton per acre.

I would recommend to appropriate one man exclusively to manure; and at leisure, after cleaning house, and putting on the heap, to collect grass, weeds, &c., out of plantations, dykes, and such like. Let him never be taken from it; a donkey or a very small horse would do for a good sized farm. If he has constant employment, he will be worth ten times his daily hire to his employer.—*Correspondent of the Cork Southern Reporter.*

VISIT TO CARR'S STEAM FLOUR MILL AND BISCUIT MANUFACTORY, CARLISLE.

(FROM THE BORDER HERALD.)

Thinking the following account of a visit to a large bread and biscuit manufactory and steam mill, which has been given to us by a visitor, would interest many of our readers, we have much pleasure in the insertion of it, more especially as we are desirous of contrasting the legitimate and proper preparation of the food of man with the worse than destruction of the bounties of heaven by the distillation and fermentation of forty millions of bushels of wholesome grain in our country, filling it with crime, pauperism, and disease. For, surely, we may exclaim in truth with the poet—

> " The serpent will never want poison to kill,
> While the fat of our fields feeds the worm of the still."

Let us look at the appalling fact which many are unwilling to behold, that the population of Great Britain and Ireland only consume *one-half* of the amount, in value, of bread, which they do of strong drink, the former being twenty-five, and the latter fifty millions sterling per annum; and then we shall form some estimate of the enormous extent of the evil, and the necessity there is for turning these agents of destruction into such useful establishments as is represented in the following familiar description:—

During the latter end of last year I paid a visit to this much celebrated biscuit manufactory, in company with two of my friends.

Our guide first conducted us into a room, about forty feet in length, where the paste is prepared for the fancy biscuits. At one end of the room, the flour, butter, and other ingredients, are formed into a paste, which is then conveyed to the other end, to undergo the process technically termed " breaking" it; that is, working it into a proper consistency for the machinery through which it has afterwards to pass.

After the dough has undergone this process, it is rapidly passed between two rollers of polished steel, and leaves them in a fit state for cutting into biscuits, by a machine which cuts and stamps them at the same time with many beautiful devices. This machine makes three strokes or revolutions per minute, each stroke pressing and cutting about eighty biscuits, which are as rapidly conveyed on to metal plates, the careful cleanliness of which we could not fail to remark, and are then ready for the oven.

We next proceeded to the ovens, which the attendant lighted up for our inspection, and exposed to our view a large quantity of biscuits in the interior in a state almost ready for mastication. We were much pleased to observe that the persons in attendance relieve the interval of watching the ovens by supplying themselves with intellectual food, for we noticed in the hands of one of them the " Poetical Works of H. Kirke White," and were informed that the worthy proprietor of the establishment has lately opened a library for the use of his workmen, which cannot be too highly commended, as many of the men and boys by this means are probably enabled to get interesting and instructive reading, which otherwise might be out of their power to procure. We were told by our conductor, who acted as librarian, that about five hundred volumes were taken out for perusal the first three months, and we have been since informed that the demand for the books still continues.

After satisfying our curiosity in seeing the fancy biscuits manufactured, we proceeded to the bakehouse, where the yeasted bread is made, which is worked by six bakers, four of whom we found on entering engaged at about half a ton of dough in a large vessel mounted on wheels, and placed on a small railway for the facility of moving it. The ovens in this department are two in number, and of large dimensions. Here also is kept the machine for rolling and cutting ship biscuits, which threw off an immense quantity every minute; and we were informed that on the same construction, but of a larger size, they are capable of preparing and cutting almost an indefinite quantity—a great desideratum, which greatly conduced to the despatch used in fitting out the late Chinese expedition.

After the biscuits are cut by an ingenious contrivance, they are ejected by the roller on to a linen strap eighteen inches wide, continually revolving round a roller at each extremity, and from thence passed on to the ovens, three in number. These ovens are constructed in the same manner as those used for fancy biscuits, which latter are frequently baked in them.

We now proceeded through the mill, and saw some fine samples of wheat and flour—perhaps it would be a difficult thing to find in the kingdom a finer sample of flour than was submitted to our observation, dressed expressly for the fancy biscuits. ' After satisfying our curiosity in the mill, we visited the packing rooms, in the first of which the cabin biscuits are packed, in chests of about 1 cwt. each; and in the room above, the fancy ones are packed in tin cases, of five and three pounds each, tastefully labelled with the manufacturer's name, which in a few late years has spread far and wide as the justly celebrated manufacturer of biscuits, a " bonne bouche" of superior purity and excellence.

These tin boxes are packed into wood chests of from half a hundred weight to 3 cwt. each. There was at the time we were there, not less than four tons ready for shipping to Liverpool.

Lastly, we visited the steam engine, which puts in motion this various and ingenious machinery, in addition to which it is made to supply its own furnace with coals.

Since our visit, we understand the fancy biscuits have reached the Royal table, and have been so much approved of, that a special appointment has been granted to the proprietor of these works as Biscuit Maker to her Majesty, for the supply of the royal household; and he is now engaged in preparing biscuits intended, we believe for the Princess Royal—an honour and trust well merited by him and the county of Cumberland, which, according to the celebrated Dr. Thatcher, of Edinburgh, ranks as the most fortunate in bringing to a strong and healthy maturity the largest proportionate number of its offspring of those who are deprived of maternal nourishment; and we conclude with the fervent wish that our Gracious Sovereign may long live to give, and Mr. Carr to execute, a long continuance of similar commands.

TO DESTROY THE TURNIP FLY.

TO THE EDITOR OF THE STAFFORDSHIRE ADVERTISER.

Sir,—I have great pleasure in communicating to my brother farmers, through the medium of your valuable paper, that I have discovered that gas-lime sown upon turnips, before their coming up, is a sure preventive against the ravages of the fly. When gas-lime cannot be obtained, gas tar, reduced with common lime, may be successfully applied between the drills, carefully avoiding the plants. A mixture of twenty pounds of flour of sulphur with a ton of lime (which will not injure the plant), may be sown upon two acres, which will also produce a beneficial effect.

I am, Sir, yours truly,

John Yates.

Colton, near Rugeley, June 15, 1841.

ON POTATOES.

(From Professor Johnston's Lectures.)

1°. Nitrate of Soda has been applied with great benefit to potatoes also. After the potatoes have been harrowed down and (hand) hoed, and the plants are four to six inches above the ground, it is applied by the hand round the stem of the plants, and the earth then set up by the plough. Mr. Turnbull, in Dumbartonshire, last year used it in this way at the rate of $1\frac{1}{2}$ to 2 cwt. per Scotch acre ($1\frac{1}{4}$ English acre), and the produce exceeded that of the land to which no nitrate was applied by 20 Scotch bolls to the Scotch acre.

2°. Applied in the same way there is every reason to believe that the sulphate of soda would have a highly beneficial effect also. I repeat my recommendation that this substance should be fairly tried with every crop, because it is a product of our own manufactories, which can be supplied in unlimited quantity, and without the chance of any material increase of cost; while the nitrate of soda is already in the hands of speculators, and within a short period has risen in the market to the extent of nearly one-third of its former price.

In *plastering* their potatoes the Americans generally put in a spoonful of gypsum with every cutting—a similar method, if preferred, might be adopted with the nitrate and sulphate of soda, though the chance of loss by percolation through the soil, would by this method be in some degree increased. In Flanders, wood ashes and rape dust are frequently thrown in by the hand, when each cutting is introduced.

3°. I shall have occasion hereafter to recommend to the attention of the practical farmer, many waste materials of various kinds, thrown out from our manufactories, the application of which to useful purposes would be a great national benefit. In reference to the culture of potatoes, I will here bring under your notice the chloride of calcium, which is said to have been beneficially applied to various crops, but to potatoes especially, with surprising effect. Under the influence of this substance the sun-flower and maize have grown to the height of fourteen to eighteen feet, and potatoes have attained the weight of two to three pounds.* In Germany, Sprengel also found it useful to potatoes.—*(Chemie für Landwirthe, I., p. 635.)*

Thousands of tons of chloride of calcium may every year be prepared from the waste materials which flow into the river Tyne, from the alkalie works upon its banks. Thousands of gallons of the solution of this substance yearly run off from the works of Messrs. Allen and Co., at Heworth, and might be procured for little more than the expense of collecting. It is also contained largely, though mixed with other substances, in the mother liquor of the salt pans; and from the numerous salt works on the coast might readily be obtained for trial. When prepared in the dry state, this substance rapidly *deliquesces* and runs into a liquid. The most convenient way of applying it, therefore, would be in the state of solution—

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* The *Rohan*, a French variety of potato, lately introduced into the United States—by the ordinary mode of culture—yields tubers, very many of which weigh three pounds, and many attain to the weight of five pounds. When perfectly ripe, it is said to be an excellent table potato, and to be best in the spring.—*Albany Cultivator for March*, 1841.

so largely diluted as to have only a slight taste—and by means of a watering cart so contrived as to allow it to flow on the tops of the ridges and young plants, by which unnecessary waste would be prevented.

Without knowing the strength of the solution likely to be obtained from the works, it is impossible to give any idea of the quantity of the chloride of calcium which ought to be employed; but 500 gallons per acre may safely be used, if the solution be so far diluted as to have only a decided taste of the substance.

The experiments here suggested, therefore, require four patches, as follows:—

Nitrate of Soda 1 to 1½ cwt. per acre.	Sulphate of Soda 1 to 1½ cwt. per acre.
Chloride of Calcium 500 gallons per acre.	Manure only.

These experiments are supposed to be made in ground already prepared for the potato crop, by the usual quantity of manure. I think it not unlikely, however, that by planting the potato in the midst of the nitrate or sulphate (sprinkled over with dry soil) at the rate of half a cwt. per acre, and afterwards applying one cwt. per acre, when the plants are hoed, a crop might be obtained without the use of manure. Of course such an experiment as this, though important to be made, should be tried cautiously, and on such a scale as to secure the experimenter from any serious loss.

In the above suggestions I have introduced nothing in regard to *mixed* manures—though where plants require for the supply of *all* their wants nine or ten different ingredients, of which the soil they grow in can perhaps yield in sufficient quantity only three or four, it is obvious that the very best consequences may follow from the employment of mixed manures. To this class belong common night soil, urine, animalised carbon, *poudrette* (night soil mixed with lime and gypsum), the *poudre vegetatif* (a mixture of soot and saltpetre), the *urate* (now manufactured in London), and many others.

The mode of preparing, and the special uses of these and other mixed manures will be explained in the third part of these lectures, which will be devoted to the consideration of the nature and uses, and to the theory of the action of natural and artificial fertilizers. In the meantime it is desirable in the first place to obtain results from which the special action of each, when used alone, can be fairly deduced.

That these experiments may have their full value, it is indispensable that a measured portion of each field should be left without manure or dressing of any kind, in order that a true idea may be formed of the exact effect of each substance employed. Experiments are valuable to the practical man if they merely show the superiority of one species of manure over another, but they are insufficient to show how much each of them tends to increase the produce, or to enable us to arrive at a satisfactory explanation of the mode in which they severally act in promoting vegetation.

Among other important experiments lately published, to which the above observation is applicable, may be mentioned those of Mr. T. Waite, of Doncaster. The effects of nitrate of soda on his land were very striking, showing a remarkable increase of produce over bone dust, rape dust, or rotten fold-yard manure—but he does not seem to have determined the produce of the same land during the same season and *without manure*. We have, therefore, no term of comparison, by means of which we can ascertain the absolute or even the exact comparative effect of the different substances employed.

It has been well observed by Sir Humphry Davy "that nothing is more wanting in agriculture than experiments in which *all the circumstances* are minutely and scientifically detailed, and that this art will advance in proportion as it becomes exact in its methods."* The above suggestions are submitted to practical men in the hope that they may assist in introducing such exact methods into our agricultural operations, and at the same time promote the theoretical advancement of the most important art of life.

Exact methods lead to theoretical discoveries, while these are no less certainly followed by important practical improvements.

EXPERIMENTS ON WHEAT.

Sir,—Should you think the accompanying table and following minute particulars about some experiments with wheat worth publishing, they are much at your service.

The table sufficiently explains the nature of the experiments and their results; but it may be useful to mention, that no wheat had grown on the spot to my own knowledge for thirty years, and no other manure applied than a gardener's mixture of leaf-mould, &c., occasionally sifted over it when used as a seed-bed for flowers.

The solution of blue vitriol was made in the proportion of 5 oz. to 3 pints. The whitewash was made by pouring hot water on quicklime, and it was used warm, and of the thickness of cream. The corns were sown immediately after the steeping. The half of each row nearest the wall had a little of a vegetable manure, made after a foreign receipt, put in it when the grains were sown. The blades began to appear November 11, and soon after a slug or two was picked off the bed, and then coal ashes were sifted over it. As the plants grew, pea sticks were inserted between the rows, and when the ears began to swell, the whole was enclosed in a frame covered with fine packthread netting. The bed was never watered, but four plants of the thick sown Whittington, farthest from the wall, were given half a pint of liquid sheep manure. By the height in the table is meant that of the longest stalks.

Some seedlings, and some shoots from last years' stubble, were transplanted Jan. 23, from another garden at one end of the bed; they were from a sort which, in 1839, had the red rust. That disease first appeared among these transplanted plants, and seemed to spread, and all the wheats in the bed were more or less affected; the blue vitrioled and whitewashed the least, and the Whittington straw was the most so.

It seems that the black specks or lines on grain, and the blackened bases, are the consequence of the red rust in the inside of the chaff. Such grains grew, and according to the results of another set of experiments, the different steepings did not seem to prevent the red rust or the black bases. This year, twenty-eight varieties of wheats are growing on the same spot. The grains were steeped for two hours immediately before they were sown, in lime water prepared by a medical man. There is no appearance either of smutty ears, *(uredo fœtida)* or chimney sweepers *(uredo segetum)*, but plenty of red rust amongst them.

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* Agricultural Chemistry, Lecture I.

In another bed of forty-seven experiments, smutty ears have appeared from corns partially smutted, and from unsteeped corns sown in a drill with the smut ball powder. But no chimney sweepers have appeared amongst the fifteen experiments tried in order to produce that disease.

There are two great objections to the steeping in the blue vitriol solution; viz., the loss of a portion of the grain, and the poisoning game and poultry. The washing the seed in many waters until the water is quite clear, and all the faulty skimmed off and then throwing it into the whitewash, has been found to be an excellent mode of preventing the smutballs. But should a few smutty ears after all appear in the crop, the roots bearing them should be pulled up and carried out of the field on their first appearance.

It is more than probable also, that the pulling up the plants bearing chimney sweepers as soon as their black tips are seen coming out of the boot, would tend to clear the country of that source of loss.

An Experimentalist.

Cobham, July 14, 1841.

TABULAR STATEMENT OF THE RESULT OF THE ABOVE EXPERIMENT.

Sown Oct. 28*th*, 1839, *about three inches apart, in drills nine inches distant, in the Flower Garden, under a South wall; No.* 1 *farthest from wall. Pulled up with their roots, August* 8*th*, 1840.

	No. of grains.	No. of stems.	No. of smutty ears.	Height of straw.	No. of perfect ears.		
				feet.		oz.	grs.
Chidhams:— Shrivelled grains from an unripe six-chested ear.	1	19		6	19	1	88*a*
	2	11			11	½	28
	3	4			4		50 *b*
	4	11			11	¾	45
	5						
	6	4			4		44
		49			49	2¾	37
Perfect grains.	1	17		5	17	¼	103*c*
	2	12			12	¾	42
	3	6			6	¼	36
	4	10			10	½	15
	5	4			4		66
	6	10			10	¼	73
		59			59	2¾	8
Perfect grains rubbed in smutball powder.	1	4	4	4			
	2	20		6	20	¾	104*d*
	3	12	12	5			
	4						
	5	11	11	4			
	6	12	12	4			
		59	39		20	¾	104

a Five of the finest ears not rubbed out.
b One fine ear not rubbed out.
c Six of the finest ears not rubbed out.
d Six of the finest ears not rubbed out.

	No. of grains.	No. of stems.	No. of smutty ears.	Height of straw.	No. of perfect ears.		
				feet		oz.	grs.
Perfect grains rubbed in smutball powder, then steeped in brine one hour, and then limed.	1	4		5	4	¼	10
	2	9			9	¼	79*a*
	3	19	18		1		
	4	9			9	¼	14
	5	13			13	½	10*b*
	6	7				¼	12*c*
		61	18		36	2	16
Perfect grains rubbed in smutball powder, and steeped in fresh urine one hour.	1	21	20	5	1		
	2						
	3	15*d*					
	4	10			10	½	43
	5	12			12	¼	45*e*
	6	8					102*f*
		66	20 8bad		23	1	81
Perfect grains rubbed in smutball powder, and steeped in solution of blue vitriol one hour.	1	20		6	6	1	35*g*
	2	10			10	½	103
	3	14			14	1	9
	4	9			9	½	19
	5	6			6	¼	8
	6	18			18	¾	23
		77			77	4¼	88
Perfect grains rubbed in smutball powder, and steeped in white-wash one hour.	1	18		6	18	¾	77*h*
	2	9			9	½	47
	3	14			14	¾	36*i*
	4	7			7	¼	29
	5	14			14	¾	16
	6	8			8	¼	61
		70			70	3¾	48
Whittington:— Having a black line on one side the grains.	1	13		6	13	2¾	15*j*
	2	9			9		
	3	5			5		
	4	7			7		
	5	10			10		
	6						
		44			44	2¾	15
18 spotless sown thick.	roots 15	99		6	99	7	0*k*

a Three of the finest ears not rubbed out.
b Three of the finest ears not rubbed out.
c Three tolerable, four unhealthy.
d All chimney sweepers.
e Six of the finest ears not rubbed out.
f One of the finest ears not rubbed out.
g Six of the finest ears not rubbed out.
h Six of the finest ears not rubbed out.
i Eight smutballs in this parcel.
j Six of the finest ears not rubbed out.
k Six of the finest ears not rubbed out.

ORIGIN OF THE MALT AND BEER TAXES.—The following memoranda may not be uninteresting to many of our readers:—Alehouses were established in this country as early as 721, and are mentioned in the laws of Ina, King of Wessex. Public-houses were first licensed in 1621, authority being granted for that purpose to Sir Giles Montpessan and Sir Francis Mitchel, for their own emolument. In 1553, the number of taverns in London was limited to 40. The malt tax was established in 1697, increased in 1760, and newly modelled in 1766. An excise duty on beer and ale was first legally imposed in 1660.

ON THE JERSEY TRENCHING PLOUGH.

(FROM A CORRESPONDENT.)

As we had not opportunity to witness the trial of the Jersey trench plough, which took place at Liverpool on the 23rd instant, an account of it, forwarded by a correspondent, is now offered to our readers. Colonel Le Couteur, who had communicated to the Council the efficacy of this instrument, and his belief that its use was the main cause of the productive crops, which are the average of the Island of Jersey, was invited to bring over a trenching plough and ploughman, in order to afford a specimen of its work.

A trench was opened through the middle of the field: a two-horse skim plough then proceeded to turn the turf along either side of the trench into it, followed by the trench plough drawn by six horses, which turned sixteen inches of clean soil on the turf below.

The plough and horses were greatly impeded by the immense crowd which lined the trench on either side—so much so, that no complete estimate of its work could have been formed, though shouts of laughter and expressions of admiration occurred at the immense wave of earth that was then seen flowing, which some compared to an ocean billow rolling over a shore. All was proceeding as well as the crowd would permit, when the trial was put an end to by the following ludicrous—as it happily proved—but at first most alarming occurrence.

The trench plough, with its six fine horses, had been once round, and was turning for a fresh furrow, when a pair of horses attached to a plough, being left by their driver, who had imprudently come to view the work, took fright, set off at full speed with the plough flying in the air at their heels, and charged the six horses attached to the great plough; the most dire confusion instantly prevailed among the hundreds of persons assembled to view the performance. In a twinkling the eight horses and two ploughs dashed off at a charging pace. Nothing we ever witnessed so completely reminded us of the armed chariots of our British ancestors clearing the field, every soul running for his life, excepting one of the drivers, who intrepidly stuck to his horses at imminent risk. Mr. E. Renant, the Jersey ploughman, never lost his presence of mind; the instant he perceived the horses disengaged, he plunged the share of the heavy plough into the land with such force that it fairly threw over one wheel-horse, which afforded time to secure the eight horses, providentially without injury to man or beast.

At Colonel Le Couteur's request, the president of the Council, Mr. Handley, decided to postpone the further trial to the following Friday, when a noble team of six Suffolk punches, which the Earl of Derby had obligingly sent for the trial, were attached to the trench plough. Another pair were tackled to an excellent Irish plough, sent for trial by Messrs. Ransome, which nearly took the required skimming furrow, thirteen inches wide and three inches deep.

The work now proceeded steadily and admirably, to the entire satisfaction of the president, Mr. Handley, Earl Spencer, and Mr. Miles, besides many other persons. Earl Derby's ploughman, a very intelligent and skilful person, a native of Scotland, who held the skim plough, dismissed his prejudices at once, declaring it "to be the finest work that he had ever witnessed or conceived; it was like two gardeners trenching after one another; it would just suit his lordship's land."

The scurf, or turf, was turned into the bottom of the furrow, and in this instance sixteen inches of clean fresh soil were lifted on it.

The horses did not draw at half their power; they could perform two acres a day with ease.

The soil was a black, sandy, peaty loam, on a substratum of sand, seated at a depth of ten to twenty inches.

The Jersey ploughman, Mr. Renant, who is a very intelligent farmer, observed—"what fine crops of potatoes and wheat we should grow here, by taking up one inch of sand every year, and well manuring it; in five years we should have a surface of fifteen inches of improved soil to work."

This instrument and the Jersey paddle plough, "Boutilliers," now in universal use in Jersey, are strongly recommended to the notice of the Lancashire and all other potato growers.

The Council have required Colonel Le Couteur to draw a report of the potato and long-rooted culture of Jersey, in a complete form, for the Journal of the Society.

The plough was purchased by Messrs. Ransome, it can be made lighter or stronger, for two, four, or eight horses.

REPORTS OF EXPERIMENTS ON THE DRAUGHT OF PLOUGHS.

(*From the Quarterly Journal of Agriculture.*)

The directors have had under their consideration communications from various gentlemen regarding the institution of a set of experiments, under the direction of the society, for determining the relative draught of different ploughs.

The directors, while they fully appreciate the importance of this class of enquiries, have not deemed it expedient to engage either themselves, or through the medium of their committees, in these experiments. The course hitherto followed by the society with eminent success, has been to obtain information on all practical subjects through the medium of experiments performed by the agriculturists of the country; and it has not appeared to the directors that the present is a case which requires a deviation from the ordinary practice. The directors have not been inattentive to the important subject of the construction of ploughs. It is but a few years since they offered a large premium for the best essay on the mechanical construction of the instrument. They have had lately under their consideration a communication on this subject; and their general premiums afford every inducement to mechanics to communicate the results of their experiments and observations.

A committee was appointed to investigate this subject, with an especial relation to certain experiments performed by Mr. Pusey, and recorded in the Journal of the Royal English Agricultural Society. The committee report, that these experiments are of great interest in themselves, highly deserving of the attention of agriculturists, and most creditable to the ingenious gentleman who has conducted them; but that it does not appear to them that the experiments, and the conclusions deduced from them, are sufficient to prove the comparative advantages of wheel and swing ploughs. The experiments chiefly relate to the relative force of draught, which the committee apprehend embraces but a part of the general inquiry. A greatly more important point is the adaptation of ploughs to the various circumstances in which they are employed under the ordinary exertions which the animals of labour are capable of making. Now, it has been found by long experience, that the simple plough of Scotland is well adapted to the different conditions in which it is employed, and performs a greater quantity of work in a given time, with the ordinary horses of the farm, than is known to be effected in those parts of England where wheel-ploughs are used. It is a common calculation that, by means of the swing-plough, a pair of horses will plough at least an imperial acre in the day, in all kinds of soils, and on an average of winter and summer, with ordinary feeding to the horses; and further, on comparing the manner in which the work is executed in the parts of England where the wheel-plough is used, with the manner in which it is executed in those parts where the swing-plough is used, namely, in the north of England, in Yorkshire, in several other of the English counties, and throughout the whole of Scotland, the conclusion seems to be greatly in favour of the simpler instrument. An advantage generally ascribed to the wheel-plough is, that it can be managed by a younger and less experienced workman. This, however, does not appear to be an advantage of great moment, in parts of the country where the workmen are fully trained to this part of their duty, and where each pair of horses is under the care of one man, who has not only to plough but to perform other laborious duties of the farm. It does not appear that the substitution of boys for full-grown men as farm labourers, would be attended with any advantage; nor is any difficulty found in teaching even boys to manage the ordinary plough.

Referring again to the particular experiments of Mr. Pusey, it appears to the committee, that even with a view to determine the relative force of draught or rather the muscular force exerted by the animals in pulling, they are not perfectly conclusive. It is necessary to take into account, as a necessary element in the calculation, the quantity of work performed in a given time. It appears farther, that a large part of the increased power supposed to be required to move the swing-plough in Mr. Pusey's experiments, arose from the greater weight of the instrument. Now a plough is made more strong in order that it may be more durable, and better able to resist the obstacles which it encounters. It were easy to reduce the weight of the swing-plough by using lighter materials; and it is difficult to believe, that it cannot be made as light as the wheel-plough, seeing that it wants the additional appendage of wheels.

With respect to the abstract mechanical question of whether the steadying the beam by means of wheels lessens the force of draught, and in what degree, this is a problem deserving certainly of being resolved, both by mechanical investigation and experiment. But, even if the question of draught were decided in favour of the plough thus balanced, it would not decide the question of its better adaptation to the ordinary purposes of the farm. The disadvantages are to be taken into account of the greater complexity of the machine, and of the workman being unable at will to alter the depth of the furrow without changing the height of the wheels. It is known in practice, that in ploughing even a ridge of land, the furrows are not all of one depth.

While the committee see no reason to conclude, from any researches yet made mechanically or experimentally, that the plough which has been so long in use in Scotland and the north of England, which performs the work with so much economy and dispatch, and the management of which is so well understood by the labourers of the country, will be found inferior to one with the addition of wheels, they express themselves sensible of the importance of instituting a set of experiments by the practical farmers of the country, which might direct attention to the subject, and determine not only the relative value of different ploughs with respect to the force of draught, but with respect to their general merits as fabricated by different artisans. It is known that even different ploughs of the same maker vary greatly in their goodness, and this owing to some very minute variation in the manner in which the parts are combined.

The directors, adopting the opinions expressed in this report, were prepared to offer a liberal premium for experiments on the draught and operation of ploughs; but having received information that the Marquis of Tweeddale, who had devoted especial attention to the form and properties of ploughs, was then engaged with a set of extensive experiments, the result of which his lordship was so good as state his intention of communicating to the society, the directors have deemed it unnecessary, for the present at least, to carry their intention of offering a premium into effect. Considerable practical difficulties existed as to the manner in which such experiments should be executed, and the tests by which the action of the different ploughs could be compared with some common standard. It was proposed that the society should itself procure the different ploughs with which experiments were to be made, and transmit them to agricultural associations and individuals who might be desirous of making the experiments, so that the operation of these ploughs might be tried in different situations, and compared with that of others used in the country. But as it is probable that the society, in consequence of the important experiments performed by the Marquis of Tweeddale, as well as of others which may hereafter be performed by other agriculturists and by public associations, may not find it necessary to carry the intention of offering a general premium into effect, the directors have to express the gratification they will receive from any accounts that may be transmitted to them of this class of experiments; and they think it proper to state their opinions as to the way in which the experiments may be performed, and as to certain points to which, in their opinion, attention should be directed.

In pursuing the experiments, it is important that as great a variety of implements as can conveniently be obtained should be compared together. The following are the Scotch ploughs which have such peculiarities of construction as may entitle them to be regarded as forming classes, and which may be used in the experiments.

1. Small's, or the common Berwickshire and East Lothian plough;
2. Wilkie's, or the Lanarkshire plough;
3. Cunningham's, or the Currie plough;

4. Veitch's, or the Roxburghshire plough; and also
5. Ferguson's plough, which was made use of in the experiments performed in England.

Of the English ploughs, the following may be tried:

1. Ransome's FF wheel-plough;
2. Hart's one-wheel plough;
3. King's one-wheel plough;
4. The Rotherham or Yorkshire swing-plough.

If possible, ploughs that are quite new should be avoided; and when in any case these are used, they should be worked a few days before coming to trial, in order that the rough surface of the irons may be worn off. In selecting ground for the trial, there should at least be two varieties, namely, stiff clay and light soil, and lea on each variety of the same age. The ploughs should be all numbered and named, and their respective weights determined before going to the field. The force of draught must be determined by a good dynamometer. In performing the experiments each plough should go over at least one ridge; and the force of draught, as shewn by the dynamometer, should be marked half-way between the open furrow and the crown of the ridge, and taken upon an average of not less than three rounds. The rate at which the plough goes should be noticed.

No furrow should be taken of a less depth than six inches, and the depth may be extended to eight inches or more; and in drawing a comparison between one plough and another, the furrows taken by them should be equal in breadth, and the soil be as nearly as possible equal. Not only should the draught of the ploughs be observed, but a careful investigation should be made of the quality of the work performed by them respectively; and on this point, it may be remarked, that certain ploughs or varieties of ploughs are valued for setting up what is called a sharp furrow, while others are disapproved of as setting up a flat or blunt furrow; and as ploughs acting in both ways are embraced in the foregoing list, attention may be directed to the manner in which the ploughs work in this respect. It would be important, too, to determine the quantity of soil actually turned up with a given force of horse power; which can be done by lifting up and weighing a square yard or two of the ground which had been moved. In comparing also the work performed by the different ploughs, there ought to be considered the position in which the slices are packed on one another, and laid up for exposure to atmospheric influence, and in an especial degree, the manner in which the bottom of the furrow is taken out, whether horizontal or inclined, clean or foul in the bottom.

The form of the mould-board, and share, too, should be attended to; the former as it affects the progress of the slice along its surface, whether gliding over it unbroken, or being broken and portions of the soil carried forward by the fore-part of the mould-board; and the latter, namely, the share, as it affects the form of the slice by cutting it from the subsoil with a horizontal or inclined line of section.

The following are Reports which have been communicated to the Society.

1. *Report of Experiments at Yester.*

BY THE MARQUIS OF TWEEDDALE.

We have had a beautiful day for the trial of the draught of ploughs. The ground selected for the trial was undulating, its composition of two qualities—clay, undrained, with a retentive subsoil, and dry-field or turnip land.

The judges were Mr. Slight, the Highland Society's Curator of Models, and Mr. Burn Murdoch; both gentlemen kept their separate notes of the draught, and invariably agreed as nearly as possible.

The dynamometers used were Cottam and Hallen's improved, and one made by Mr. Slight, on Regnier's principle. After trying the former on the English ploughs, we found the vibration of the pointer so much greater on it, that we used the latter to the satisfaction of every one, both dynamometers agreeing when tried with a dead weight.

The depth and breath of the furrow-slice were measured by Mr. Stephens, I occasionally assisted, and many others satisfied themselves, by using their own foot-rules.

The standard depth of the furrow was 6 inches, and the breadth 10 inches. Of the ploughs under trial, those of Ransome and Hart only had wheels, the former two, the latter one wheel; all the others were swing ploughs. The absolute weight of the plough, the measure of the draught on the turnip, or light land, and also on the clay, were ascertained.

The English ploughs were worked by two as good ploughmen as are to be found in the country, with first-rate horses. Ransome's FF had worn out two socks before the trials; Hart's had worn out one and broken another. They had the crown of the ridge, in the first set of experiments, while the Yester ploughs were consequently near the furrow. The ridges were curved, and those present remarked the advantage given to the English ploughs, by working on the crown of the ridge.

The Yester ploughs are of wood, the mould-boards of iron; the form of the mould-board is on Small's principle, and the different parts were arranged and put together by my own carpenter. The English plough, Ransome's FF, with two wheels, was procured from Cottam and Hallen. Hart's plough had one wheel, and the mould-board was in two pieces, as usually constructed; it also was got from Cottam and Hallen. The other competing ploughs are known by the name of their makers. The plough that shewed the least vibration was the Yester plough, No. 1. The Yester plough, No. 2, with the same kind of mould-board as the No. 1. Yester plough, but, as will be seen, lighter in weight in all its parts, was much the same in draught as No. 1. The vibration on the dynamometer was much greater on it than on No. 1.

The reason for trying a plough of lighter weight, but of the same form, was to ascertain if a difference of absolute weight produced a corresponding difference of draught in working. Ransome's FF and Hart's were very unsteady in comparison to No. 1 Yester plough. The ploughmen by practice could manage them; but persons who thought they could hold a plough well, found considerable difficulty amongst the gravel and stones.

The pace at which the horses walked was at the rate of ploughing a Scotch acre per full day's work of ten hours.

I make no observations about the work performed, leaving that to the judges. The following is their report:—

Report of the Judges on the Comparative Merits of the Ploughs tried.

1st Set of Trials.

Name.	Weight.		Measure of Draughts in Imperial Stones		Observations.
	st.	lb.	Dry field.	Clay soil.	
Hart's	10	0	20½	28	Furrow not well taken out.
Ransome's	12	0	26	34	A better furrow, but not well laid up.
Yester No. 1.	12	10	20½	27	Steady motion, and clean furrow.
Yester No. 2.	9	12	21	31	Clean furrow, but not so steady.
Scoular's	11	8	22	31	Scoular's improved plough making very good work.
2d Set of Trials.					
Hart's	10	0	22½	31	
Hunter's	14	8	30	39	An upward curve in bottom of furrow
Currie	12	8	27	35	Do. Do.
Yester No. 1.	12	10	22	31	By far the best furrow in the field.
Coltman's	12	12	25	35	Second best furrow.
3d Set of Trials.					
Hadden's	13	0	27	36	Furrow not so good as Coltman's
Kirkwood's	13	0	26	35	Better furrow than last, and nearly equal to Coltman's.
Neill's	13	8	27	35	New iron plough, very good furrow, but not equal to Yester No. 1.
Coltman's	12	12	24½	32	
Yester No. 1.	12	10	22	26	

I think it right to state, that my steward had kept a record of the draughts of the different ploughs working on my farm, ever since I got the English ploughs; and on comparing them with the draughts ascertained by the judges, they were as nearly as possible the same, thus making the private to agree with the public trial.

It is my intention to make another trial of the ploughs in crossing stubble-land with a deep furrow, which is the next operation on my farm. When the ploughmen have had sufficient experience in holding the ploughs in this situation, I will request you to assist me in another public trial.

Throughout the future trials, I shall follow the same system, making the two English ploughs always do the same kind of work as the Scotch ploughs, which seems to me the only satisfactory manner of judging of their merits.

Yester, Tuesday, 23d February, 1841.

[In a subsequent communication, the Marquis states, that he had been interrupted in his experiments by Ransome's plough having been broken to pieces; and by Hart's plough having been so disabled that it could not work. His Lordship observes,]

It has always appeared to me, that the only reasonable and profitable manner of trying whether the English ploughs were lighter in draught, superior in strength, more efficient in doing their work, as well as more economical to the farmer, was to make them work in the same field with any of the common improved Scotch ploughs, those which I employ being of that variety of them commonly called Small's plough.

The operation which afforded the trial on this latter occasion, was crossing stubble-land that had been drained during winter, but which, from the fine weather we have had, had become excessively dry and hard. In this field some trees had been taken out by the roots.

On the first day, five Scotch wooden ploughs with iron mould-boards on Small's principle were drawn each by three horses. The ploughman guided his horses, and held the plough. The work was well done, the depth was from 12 to 13 inches, the breadth from 10 to 11. During the day, and the previous night, as well as the following night, rain fell which moistened the land. I ordered the English ploughs to be tried the next morning. My steward, feeling anxious to bring the English ploughs to this work by degrees, yoked them with a pair of horses. He made Ransome's FF without wheels plough eight inches deep; but it neither could throw the furrow-slice over, nor clear the furrow; the beam would not allow the plough to go deep enough into the land, without the beam scraping the ground; and in ploughing, where some small fibres of a tree root were left in the ground, the coulter was broken in two, the sock too was broken, and the beam and mould-board were separated from the stilts. My steward, who walked constantly alongside this plough, tells me the horses had not their full weight upon it, and that the ploughman was very cautious, in the fear of his horses springing forward when they met an impediment. The same pair of horses were then yoked to a Scotch plough. As soon as they cleared out the preceding furrow, they ploughed 12 inches deep by 10 in breadth, passing through every obstacle until the morning's work was finished. In the afternoon the same ploughman tried Hart's plough without the wheel; it could neither go the depth nor clear the furrow like the Scotch ploughs. I was on the field on this occasion: in passing amongst some small fibres of the root of a tree, the iron-plate that is attached to the beam for holding the coulter was broken into several pieces; and the screw-nails that fasten it to the beam were broken in two. I desired the ploughman to clean out the furrow with his own plough, and give the horses their full swing; the plough was brought up once by a root, the horses laid their full weight on it, and were held fast. I then sent for another horse, and desired the ploughman not to spare the plough if it met with opposition; it, however, carried every thing before it, notwithstanding the roots, stones, &c., through which it had to pass. This Scotch plough is the same in every respect as No. 1 Yester plough, mentioned in my first report.

From the trials I have had with these English ploughs, I feel convinced they are neither lighter in draught, equal in strength, so efficient in doing their work, nor so economical, as Small's Scotch plough. I do not refer to other Scotch ploughs, as the present trial has been with Small's. The price of a Scotch wooden plough, with iron mouldboard is *2l.* 10s.; of an iron plough, *3l.* 16s.* The price of the English ploughs is as under :—

	£ s. d.	£ s. d.
Ransome's two-wheel plough		4 10 0
Besides 1 doz. extra cast-iron shares	0 18 0	
3 ground rests, 10s. 6d.; 1 coulter, 5s.	0 15 6	
	1 13 6	
Hart's plough		4 10 0
Besides 1 doz. extra cast-iron shares	0 18 0	
½ doz. ground rests, 12s.; 1 coulter, 5s.	0 17 0	
3 land side plates	0 9 0	
	2 4 0	

Of these two ploughs, Hart's has proved itself to be of the strongest construction, and the plough that can throw over the deepest furrow-slice, but it does not clean the bottom of the furrow. Ransome's FF is the best for cleaning the bottom of the furrow when ploughing lea. Both the English ploughs appear to do their work better when going slow, than in going quick, when their wheels are used, in ploughing lea, particularly Ransome's FF, which certainly does the best work of the two on lea. The ploughman in charge of Ransome's FF was partial to it for that operation.

To others, who saw these ploughs, it was quite evident that neither of them would do all the work performed by the Scotch ploughs. I shall endeavour to have the ploughs repaired, and try them in drilling up for turnips. One satisfactory thing I have to notice, which is, that I have never found the Scotch horses wanting in strength to perform any work required of them when yoked to a Scotch plough on Small's principle, and I shall be very unwilling to give up using this kind of plough until I find one that is as well adapted for all kinds of ploughing, and which will cause less exertion to the animals of draught.

(For the "Report of Experiments at Rozelle, by a Committee of the Ayrshire Agricultural Association," see the Farmer's Magazine for April 1841—*p.* 245.*)*

IMPROVED HOE.—Amongst the horse hoes exhibited at the Liverpool Agricultural Meeting was one shown by Mr. Binns, of this town, the author of "The Miseries and Beauties of Ireland," of his own invention. The chief advantages over other hoes in general use, though similar in general appearance, are—The hoes and knives being so arranged as completely to under-cut the whole interval between the rows; the teeth at the same time pulverising the soil, and tearing to the surface every weed; the inclination of the teeth by which weeds, which would adhere to the common horse hoes and choke them, have in this a natural and irresistible tendency to rise upwards to the shank of the teeth, which being rounded, however numerous or large the weeds may be, they cannot adhere, but fall off, and preserve the implement clear, preventing the injurious practice of lifting it up and causing an interruption to the working of the hoe; the implement being of iron altogether, and the teeth being fixed alternately in the bulls, and it being open in the middle, more room is thus allowed for weeds to escape; the knives usually placed opposite to each other, collected a mass of earth and weeds, which in this is completely avoided by space being left between them; the coulter-like shape of the teeth having a fine edge in front, as well as the lightness of the implement [78lb.] renders it very easy draught for one horse; its length, at the same time, and teeth giving it great steadiness in strong or stony ground, in which it works admirably.—*Lancaster Guardian.*

PRICES OF WOOL AND WHEAT.

TABLE OF PRICES OF WOOL AT THE GREAT INVERNESS WOOL MARKET, HELD IN JULY, YEARLY, FOR THE FOLLOWING YEARS, AND FIARS OR AVERAGE PRICE OF WHEAT FOR THE COUNTY OF INVERNESS, AS STRUCK YEARLY IN FEBRUARY, FOR THE CROP OF THE PRECEDING YEAR.

Years.	WOOL. Cheviot, per 24lbs.	Cross washed, per 24lbs.	Cross unwashed, per 24lbs.	Black-faced, per 48lbs.		WHEAT.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£ s. d.
1823	0 9 9	....	....	0 10 9	*	
1824	0 13 6	....	....	0 12 3		
1825	1 0 0	....	.....	1 0 6		
1826	0 12 6	....	....	0 10 6		
1827	0 12 0	....	....	0 13 6		
1828	0 8 9	....	....	0 11 6		
1829	0 8 9	....	....	0 8 6		
1830	0 9 9	0 8 3	....	0 9 6	†	2 8 10
1831	0 19 9	0 14 0	0 12 6	0 16 0		2 17 6
1832	0 15 0	0 13 9	0 10 0	0 15 0		2 16 6
1833	0 19 9	0 15 0	0 13 0	1 1 0		2 6 6
1834	1 2 9	0 18 0	....	1 5 0		2 2 6
1835	0 19 9	0 14 6	0 13 0	0 19 9		1 18 6
1836	1 4 6	0 15 0	0 13 3	1 2 0		1 14 6
1837	0 14 0	......	.....	0 14 3		2 5 8
1838	1 1 6	0 15 6	0 14 0	1 2 0		2 8 9
1839	0 19 0	0 12 6	0 10 6	0 19 0		3 4 8
1840	0 15 0	.....	......	0 14 6		3 5 0

* In these years the fiars were ascertained by the local measures, and not by the qr., or imp. measure.

† Crop, 1829, struck February, 1830.

A CYCLOPÆDIA OF COMMERCE, MERCANTILE LAW, FINANCE, AND COMMERCIAL GEOGRAPHY.

By W. Waterston, Accountant.

Edinburgh: Oliver and Boyd; and Simpkin and Marshall, London, 1841.

The first part of this work has appeared, and will be continued in quarterly numbers at 3s. 6d. each. The publication is intended to comprehend a concise description and explanation of everything connected with commerce, commodities, statistics, banking institutions, commercial laws, companies, mercantile laws, in the arrangement of an alphabetical dictionary. The author has extended the utility to the three kingdoms, and describes the technical differences that occur.

The laws and regulations are given from the best authorities; the whole seems got up with great care and labour, and will prove of much use to commercial persons and others, who may want information on such subjects in a condensed and easily accessible form.

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* The price of malleable-iron Scotch ploughs, for two horses, varies from *3l.* 5s. to *4l.* 10s.; and the contract price for keeping a plough in working condition, including the shoeing of a pair of horses, ranges from *2l.* 10s. to *3l.* per annum.

ON EARLY SPRING FEED.

BY MATTHEW M. MILBURN.

(PRIZE ESSAY.)

(From the Journal of the Royal Agricultural Society of England.)

The increased quantity of stock which the farmer is enabled to keep by the introduction and successful cultivation of green crops, requires his best attention to furnish them with a constant supply of green food, especially such portion of his stock as are not intended for fattening. The use of the artificial grasses on arable land in summer, and of turnips in the winter, has been brought as near perfection as may be; but it is quite certain that the wants of the sheep and cattle, from the time when the turnips are consumed to that when the grasses become available, are not equally well provided for. In order, as far as possible, to remedy this deficiency, recourse has been had to the cultivation of turnips which long retain their nutritious qualities, and the Swede has been truly invaluable for this purpose. But while these roots have furnished very palatable and nutritious food for one portion of the stock, they have altogether failed for the young—the principal object of the breeder's anxiety. For as well as having an abundant flow of milk from the dam, every breeder is desirous of training the young stock to help themselves as soon as there is food of a proper quality available for them; and if the young lambs in particular are kept from green food until they are turned into the gross clover leys with their dams, there is great danger that a portion of them will be lost. It is generally desirable to keep the clover leys free at least until May, and long before that time the young stock should be trained to eat a considerable portion of green food.

With the view of supplying this want, several crops have been cultivated for early feed in the spring, with greater or less success, and under greater or less disadvantage, according to circumstances; but the farmer who occupies a poor soil is, more than any other, under the necessity of grappling with the difficulties he may have to contend with; for lateness of vegetation and certain destruction of his crops of grass are sure to be the consequence if he break into them before they attain a proper degree of maturation, and yet he has also the greatest difficulties to surmount in cultivating any spring crop.

The farmer, on the other hand, who cultivates rich fertile land where he has a deep alluvial soil, growing every crop luxuriantly, can easily free a pasture early in the autumn, and have it full of young grass as early as he may require it, and knows nothing of the difficulties which attend his less favoured neighbour.

The avidity with which any new variety of grass or plant promising early growth is tried, indicates how desirable a point it is to secure an early supply of succulent food. At one time it was hoped that this desideratum was discovered in the crimson trefoil. The writer of this paper made a trial of it at its first introduction. It was sown upon a wheat stubble, on land intended for turnips, and got in the first week of September, after one ploughing and a very slight dressing of compost. The greatest part of it went off by the frosts during winter—one plot was eaten with the ewes and lambs in April, but the produce was so trifling as to be a mere mockery to the animals. The remainder was allowed to remain to see whether it would afterwards be available. It was not broken into until the latter end of May, indeed after the sheep were shorn, and was so thin and stunted as to be scarcely worth the trouble of cultivation. Owing to the lateness of the season when the land was broken up the turnips on the trifolium piece failed—the barley which succeeded was overrun with weeds, and the red clover from this too rapid succession of the *trifoliums* was unusually bad.

The writer was scarcely satisfied with these experiments, and imagined he had met with foreign-grown seed too tender for our country, and determined to endeavour to procure English seed. The introducer of it, J. Foaker, Esq., very kindly sent him a small parcel for a trial, but though very carefully tried under the most advantageous circumstances he had to pronounce it most decidedly unsuccessful.

Some farmers tell us of the success of feeding the ewes at yeaning time with young *furze*, portions of which they annually burn, to have it of the requisite growth. As this however can apply only to sheep of constitutions peculiarly strong, it is scarcely worth notice.

The winter tare is one of the most valuable esculents for stock in possession of the cultivator, and affords the greatest bulk of nutriment of any cultivated green crop, turnips perhaps excepted, and is relished at all seasons and by every kind of stock. It is sometimes resorted to for depasturation in the spring, with a view to subsequent soiling, but it is after all rather a *summer* than a *spring* crop; and it is more than problematical that the injury done to the crop by spring feeding upon it is greater than the amount of spring food thus obtained. If it be worth while to have a supply of early feed, it is worth while clearly to provide a crop specially for that purpose. As a *spring* crop, according to the writer's observation and experience, it is decidedly inferior to other cultivated plants.

The writer of this paper has seen rye-grass very successfully cultivated as early spring-feed sown alone. It requires to be sown a whole year before it is fit to consume, and thus lies open to the objection of interfering with good husbandry, particularly the hoeing of the corn crop, with which it is sown a whole year before, as well as preventing the ploughing of the land for the same period; thus encouraging the growth of quitch and weeds, while the adhesion of the soil which it produces, and the accumulation of roots, &c., very materially prevent its kindly working for the crop intended to follow.

The above remarks are made on the supposition that the ryegrass is introduced as a half-crop, for it must be quite clear to every practical farmer that there is no sound practice in throwing away a whole year's crop for the sake of one month's feed in the spring, valuable as it undoubtedly is. The trials above mentioned which the writer has seen have been with Pacey's rye-grass, and though the Italian rye-grass would furnish a greater portion of food, supposing it tillered as much as Pacey's which is not the case, yet it is liable to all the above objections, and from the observation of the writer it appears exceedingly doubtful whether it will bear an equal degree of frost to Pacey's.

It is the intention of the writer now to state his experience, and offer his recommendation of a crop embracing all the advantages of the preceding, and several peculiar to itself. It is that of *rye*, eaten in the early stages of its growth. It is intended to intervene between the last crop of the four-course system, which is generally wheat, and to be eaten, and the land ploughed and worked for a crop of turnips. It is equally applicable to all kinds of rotations, and would well precede a fallow or a crop of rape. As it is generally upon farms where the four-course system is pursued that spring-feed is most wanted, the writer will confine his observations to that rotation.

So soon as the wheat is cut in the autumn, the plough should be set to work. This may be done even before it is carted, during the mornings of harvest. A single ploughing is given, and a very slight dressing of any kind of short manure. In some cases where the farmer lays on his manure in the autumn, for turnips the ensuing year, it might be better to lay it on before the ploughing. It should be remembered that the slight dressing should not all be considered as given to the rye; in reality it becomes incorporated with the soil, and more intimately mixed with it than by the ordinary mode of spreading it on in the autumn, and any part of it which the rye may abstract, will be more than compensated by the droppings of the stock, and the carbonic acid gas which they evolve while consuming it; and which the soil more readily absorbs in the spring than in any other part of the year, evaporation going on at that period to a much smaller extent than in any other.

The seed must be sown upon the plough-seam broadcast, at the rate of 2½ bushels per acre, and if of that year's growth so much the better, as it is earlier, and more certain of germination. To this a peck of rapeseed per acre should be added; for although the latter is not able to stand a winter when the frosts set in early and severe, in many cases it will get sufficiently vigorous to resist any ordinary frost, and will much improve the feed in the spring. Should the rape not be sown, a peck of winter tares per acre will improve the feed, or an additional peck of rye may be added; as a fuller bite and excited growth in its early stages will be secured—a point gained when wanted to depasture, although it might be injurious if sown for a crop.

In cultivating rye as feed there need be no fears entertained of its becoming "winter proud," for as that only affects the ears of the corn, it is a circumstance of no importance, and therefore the earlier it is sown the better able it is to resist the early frosts, as well as having a better cover and more feed when wanted. When sown it should be thoroughly harrowed, but not rolled—a *double* with a pair of fine harrows is sufficient, and the surface weeds should be gathered off, or the whole raked with the hand, which will more efficiently cover the seed. An advantage is gained to the soil by this ploughing, which cannot be obtained when the land is sown with the vetches. The annual weeds on the old surface are prevented from running to seed, and a new surface is exposed to the air and frost.

The rye will be fit for consuming the last week in March or the first in April, or if allowed to remain until the middle of the latter month, it will carry a greater quantity of stock. After it is thoroughly eaten up, it should be freed, and by the first week in May will afford another pasture of fine young nutritious feed; at least in ordinary seasons. It is bad management, though sometimes practised, to allow the rye to remain uneaten until the seed-stalk begins to shoot, for in that case it will become much less palatable and useful. By consuming it young it is much more valuable, and the succession crop equally so as the first.

The second crop being consumed, the plough must be put into operation, and the soil prepared for the succeeding crop; and the advantage of its cultivation, by no means a small one, is, that it interferes with no other crop. Perhaps a short digression may be pardoned on the subsequent preparation of the soil. The writer's practice is different to that of most other person's. Usually it is cross-ploughed a fortnight after its first ploughing. Time is thus lost, and the slices are cut into squares difficult to be acted upon by the harrow. The writer begins to harrow as soon as the newly turned up surface of the first ploughing is sufficiently dry. This brings up the lowest part of the roots of the weeds and closes the interstices of the furrows, so that the remains of vegetation being covered, deprived of air, and gathering moisture, begin to decompose. Instead of cross-ploughing, it is again ploughed lengthways, and the old surface again brought up and harrowed. The weeds separate much more easily by this process, and much time and labour is saved; the same practice is applied to bastard fallows with the same good effects.

Rye has the decided advantage of being capable of resisting *any conceivable* degree of frost, and when even the hardy wheat is carried off by an ungenial season, it will escape injury, and even thrive. At this time (Feb. 21, 1840) the writer has a plot growing for feed which would now afford more eating than almost any mixture of artificial grasses in the middle of April, and that on a thin light soil not worth more to rent than 25s. per acre. Some of the rape has succeeded, even in this season of incessant rain, which prevailed not only in the early stages of its growth, but ever since it was sown. It can bear so much and constant wet, worse even than frost.

The expense of this crop will be somewhere as under. Say per acre:—

	s.	d.
2½ bushels of rye at 4s. 6d.......	11	3
½ peck of rape	0	10½
	12	1½

It should be remembered that this interferes with no operation of husbandry, and prevents no crop, so that no rent of land or other extras are to be reckoned—the ploughings would be nearly the same if the rye were not sown. Nothing is better relished by stock at the season when it is intended to be used; a guide by no means unsafe as to its nutritious qualities, and which is borne out by the condition of the stock feeding on it.

To recapitulate the advantages of its cultivation—

I. Provision of excellent green food is made at a season of the year when of all others it is most wanted.

II. It is produced without sacrificing any portion of the usual rotations pursued on a farm, and with little extra labour, nor does it interfere with the management of any preceeding or succeeding crops.

III. It will grow on any soil, but is especially calculated for poor loose sand,* when every other green esculent is more or less uncertain.

IV. It will bear any degree of frost to which our climate is subject, and is sufficiently hardy to defy the effects of the coldest situations in the country, being there cultivated instead of wheat for a corn crop from necessity.

V. It is as inexpensive or more so than any grass or leguminous plant.

VI. It is readily consumed by stock, especially young animals.

VII. It improves rather than deteriorates the soil upon which it is grown.

Thorpfield, near Thirsk, Yorkshire.
Feb. 21, 1840.

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* Sowing rye, and feeding it off in the same spring, has long been practised in the neighbourhood of Saffron Walden, and is very useful when the turnip crop fails; but it does not answer on our poor light soils.—BRAYBROOKE.

TO THE FARMERS OF THE UNITED KINGDOM.

GUANO.

Gentlemen,—The importation of this substance by Messrs. W. J. Myers and Co. of Liverpool, is mainly, if not entirely, owing to the spirit of agricultural improvement, which has of late been diffused through the country. A retrospection of the state of agriculture in Great Britain, shows—that while arts and manufactures have made daily, indeed, hourly strides to perfection, the far more important interest, the production of food has received nothing but neglect; and in truth, the tillage of the soil, has until necessity compelled a change, been considered as an employment, beneath the notice of science, and as such, been conducted by those from whom knowledge could not be expected nor new ideas obtained.

Within the last few years however, the increasing population and their improved condition have called imperatively for a larger supply of food, and enquiry once commenced, the magnitude of the subject became apparent to all.

Chemistry, of which every agriculturist is the unconscious professor, so intimately connected with the progress of vegetable life, that the simplest duty of the farmer is dependent on its laws; chemistry is at length recognised as the readiest key to knowledge, and to carry out the advantages offered by its mighty aid, associations of all classes in the country have been formed, and assistance given on a scale to which no other empire in the world can afford a parallel.

The object I have now in view, is to introduce to the agricultural world of England, a manure, which in another climate has been of long use, and most beneficial effect.

Guano (the name it bears) is the deposit of sea-birds on islands in the Pacific Ocean, and is found there in large quantities, being the accumulation of ages past.

Its component parts are in fact a collection of valuable manures, and the effects resulting from its use, though only what must follow the nature of its composition, are beyond all other manures whatever extraordinary.

It would far exceed the limits of this letter to detail all the experiments which have been made, or to mention all the proofs that have been recorded of its worth. It has been tried upon sixty different farms, and on every different crop; and I may say, that, not only in no instance has failure attended its application, but in every case, its produce has astonished the farmer who has tried it.

A gentleman of the name of Smith, farming largely at Gunton Park, in Norfolk, was induced to try it on his land. He applied four bushels, about 200lbs.' weight, to a statute acre; and on the same field alongside on an equal quantity of land, applied 15 bushels of bone dust. Both were drilled into ground with the seed wheat; the Guano gave 6 qrs., 2 bush., 1½ peck; the bone dust, 4½ qrs. of wheat.

I might multiply examples, but the diffusion of knowledge on these subjects is now so general, and so many able lectures are given by which the virtues of this substance *must* be noticed and made known, that I prefer leaving their promulgation in abler hands than mine; and if all who come forward to aid the advancement of agricultural improvement, bring to the task the practical and scientific skill of Professor Johnston, of Durham, with the simplicity of composition which makes the study of his lectures so pleasing; the attainment of a perfect system of farming is nearer than might be reasonably looked for or supposed.

The system of its use is easily explained and adopted. It is in appearance a dry powder, and its weight is about 52lbs. to the bushel. Four bushels mixed with one bushel of powdered (wood) charcoal, form the supply for one acre. The charcoal has the power of holding ammonia in its pores, and it has been found that the mixing and applying it with Guano, has rendered the second year's crop almost as abundant as the first.

I would recommend it to be applied by different means to the earth. By drill with the seed, as shewn in Mr. Smith's experiment, and from which such a favourable return was obtained; and also broad cast over the land, being afterwards lightly ploughed or harrowed in.

It should be remembered, that its diffusion amongst the earth round the roots of plants, is the object to be attained. Its composition, I repeat, is of that nature which must, under any circumstances, do good; and the trials of different modes of using it, will soon establish the one to be preferred.

For wheat, the experiment of Mr. Smith is a type of its action. On clover, turnips, barley, oats, and hops especially, it is, if anything, more evident still; while to form a judgment from the past, the book lately published by the German chemist Liebig, and which contains a beautiful exposition of the principles of vegetable existence, says:—"*A small quantity of Guano, will on the barren shores of Peru, produce an abundant crop of Maize.*" On those barren shores, it has been used from time immemorial.

The day is near at hand, when if "*sufficient manure for an acre be not carried in a waistcoat pocket,*" which was the prophecy of a clever writer some years back, at least its concentration will be better understood, and the application of particular food to particular plants (which when correctly understood and practised, is the foundation of successful farming) will soon be appreciated as reasonable in theory, and found on trial to be correct in practice.

And for the prosecution of improvement, how advantageous is the position of the farmer. Pestilence may sweep over the land, wars may ravage it, fire may consume; but from each calamity of man, as from every blessing he enjoys, there spring new causes to excite his gratitude; and in the destruction of the vilest herb at our feet, as in the lingering decay of objects the most beautiful, and which we mourn to witness, we shall find but the change of condition necessary to return their nourishment to the earth, that, in *its turn*, it may bring forth fresh food for the living creatures that are upon it; and from the enterprising spirit of the British merchant, and the knowledge which makes it available as well to his fellow countryman as to himself, the farmer will obtain all the assistance he can require. I might cite many proofs, but that the Guano which is more immediately connected with these observations affords the strongest evidence of the fact. When we consider that the great body of the English agriculturists were ignorant even of its existence—that it was the opening of a new trade—under circumstances of at least some doubt and risk, the greatest credit is due to the Messrs. Myers, by whose exertions, and through whose instrumentality this new and valuable auxiliary has been obtained. From the union thus effected between commerce and agriculture, there cannot fail to spring the happiest results, and at this particular juncture, more especially, such partnership of advantage will be of use.

It is a circumstance most gratifying to me, that being the first to introduce the nitrate of soda among the farmers of England, the Guano should likewise pass through my hands. I believe it will be found of great benefit, and it will lead those who use it to reflect upon the condition and composition of matter, when they will find that there is scarcely a substance which the eye can rest on, that is not available to their use. That such enquiry may arise should be the earnest wish of all who would maintain the happiness, and preserve the high standing of their country.

Your obedient servant,
A. Macdonald.

3, *St. Mildred's Court, July* 30.

Analysis of Guano—100 parts.

Bone Earth	30½
Sulphates and Muriates	3
Lythic Acid	15
Ammonia	15
Other Organic Matter	36½
	100.0

JERSEY PLOUGH AND AGRICULTURAL IMPROVERS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—In your paper of August 2nd, I see a letter from a correspondent, who says he saw the Jersey plough at work in the trial of implements which took place at Liverpool ; he seems to think much of the Jersey plough, and gives testimony to its turning over, to use his own word, sixteen inches of clean soil ; also, that the work proceeded steadily and admirably, and to the entire satisfaction of the president, Mr. Handley, Earl Spencer, and Mr. Miles, besides many other persons ; indeed the whole tenor of his communication is so much in favour of the Jersey plough, that if he had got one to dispose of, he could not have much better puffed off its merits, at least what your correspondent estimated as merits.

Now, Sir, allow me in the first place to inform your correspondent that I claim some knowledge of ploughs and ploughing, also of trenching ; and secondly, I wish to remark, that I was on the field before operations commenced and during the whole time of trials with different implements ; and with respect to the Jersey plough, I consider it in a very different character to your correspondent. To use this plough for trenching, compared with the spade, either for economy or efficiency, it would be something like a person going from Manchester through Edinburgh as the direct route for London. There was a great fuss of preparation for the Jersey plough before it did anything ; and when it did perform, it was not steadily, nor did I hear a single individual express any admiration in its favour. Notwithstanding this, it might give satisfaction to Mr. Handley, Earl Spencer, and Mr. Miles ; if Mr. Handley was in error respecting this plough, it is not his first in agricultural matters : none of the gentlemen named are ploughmen, neither should I suppose that they consider themselves the best judges of ploughs. Let me also further observe, that to give correct views of any instrument, we must first have some idea how to use it. I inquired of Mr. Renant, the Jersey ploughman, how long Col. Le Couteur had used the implement in question ; he said, it had been employed seventy years : however, this circumstance of its being an old implement makes it of no less utility, for there were many new ones on the field which I considered almost useless ;—but a little more on the performances of Col. Le Couteur's plough.

Your correspondent says, a trench was opened through the middle of the field, but he does not inform us how the trench was opened ; I saw four or five men working with spades, besides the skim plough, to prepare a way for Le Couteur's, and after all this it did not turn up sixteen inches of soil ; and as to the work being neatly or correctly done, or that the six horses did not draw half their power, I am astonished to see such a statement.

We are told by your correspondent that the Jersey ploughman is a very intelligent farmer, and that he observed what fine crops of wheat and potatoes he could grow in the soil he was experimenting upon. Now I am not disposed to dispute the intelligence of that individual, but such a statement, Mr. Editor, may lead some to believe that he, Mr. Renant, was much more skilled in growing wheat and potatoes than the farmers about Liverpool : let me, however, respectfully ask Mr. Renant, and also your correspondent, if they can pay £4 per statute acre for such land. This sum is paid, and in some instances even more, for farms within twelve miles of Liverpool ; and I consider this fact to be a tangible argument in favour of the farmers of that vicinity ; they could not meet their landlords with such rents from very defective management. I will say further, that the potato and wheat growing districts of Lancashire and Cheshire may challenge their cultivation with any in the world.

I have read with some interest the letter of your correspondent, " A Cheshire Farmer," on the subject of the award made by the judges at Liverpool, in class first for dairy cows. That the premium *specially* for dairy stock should be given to an animal showing so little milking power, I was equally astonished as the " Cheshire Farmer ;" and the more so when there were decidedly more useful animals in the yard. I mentioned the circumstance to one of the stewards and a gentleman with whom I had some little acquaintance ; he replied, that the judges were men of great experience. I observed they might be so in particular classes of animals, but at the same time they might be very little acquainted with dairy stock ; and, let me here remark, as important as any horned stock in the kingdom.

I have had little experience in sheep ; however, in looking over the different classes, I did not think the show as a whole what it ought to have been, considering it a national affair ; but if we make our inquiries a little further, we shall soon be enabled to account for want of numbers.

It must be admitted that many of the visitors at the late show in Liverpool, and indeed the mere lookers-on at such exhibitions in general, believe the prize animals to be not only the finest to outward appearance, but also that they are the best paying stock, and consequently such as all farmers ought to endeavour to obtain. We are not, as some suppose, for their prejudices, or as many pretenders believe, or affect to believe, of the farmers as a body, a total void of common sense necessary to carry on their own affairs, either to their own advantage or that of the public. Now, to all who suppose this to be our condition, I address myself, and can safely say, that in nineteen instances out of twenty, those who keep such stock, and carry on their hobby in the same spirit as Earl Spencer does—the Marquis of Exeter, and many others I could name—are absolute and serious losers by the concern; notwithstanding this, I consider cattle fancying a very proper and legitimate pursuit for great proprietors, but in general it tells a poor tale for men of limited or moderate means. Of this we have had ample evidence in the many who have, within the last thirty years, taken to what is called breeding and feeding improved stock for prize exhibitions, and been obliged to give it up again; in truth, to not a few has it ended in ruinous consequences.

The late Rev. Henry Berry, of short-horned celebrity, was a native of this county; like many other breeders, he was *from* home considered a great agriculturist. He occupied but a small farm, I think his own property, and in truth it was one of the worst managed farms in the county, stocked with a few pampered animals, the rest were half starved.

On journeying to the great Agricultural Meeting held at Oxford, in 1839, I, in company with a practical friend, went sixty miles out of our way to see Earl Spencer's management at Brampton, in Northamptonshire. We certainly were much gratified with seeing his live stock, but at the same time we must say, as we have already intimated, that it consisted of animals many of which were supported in a manner which no farmer could afford who had a rent to make and pay for his farm; and with respect to the cropping department of the noble Earl's farm, I can any day see better, neater, and cleaner management on land occupied by rent-paying tenants either in the neighbourhood of Manchester or Liverpool. I have particularized more on the agriculture at Brampton than under some circumstances I might have done, chiefly because I know, at least believe, that the noble Earl Spencer—once honest Lord Althorp—will be less offended with plain truth, though it does not exactly commend him, than with hollow praise given to his seeming advantage.

I now come to Mr. Bates, of Kirkleavington, as an agriculturist and improver; that is, making two blades of grass grow where only one or perhaps none grew before. Of this gentleman's competency no one can doubt, who has read his letter in the *Express* of August 2nd. In his speech at Liverpool, he congratulated the assembly on the glorious prospects in agricultural improvement resulting from their labours: but how stand the facts in his own case? Why, in a letter published in the *Express* a few months since, and addressed to Mr. Price, of Poole House, Upton-upon-Severn, Mr. Bates states that the land he occupies (which I understood to be his own property) is so poor that the season is frequently far advanced before he has a good bite of grass for his cattle: this, his own admission, does not announce much in his favour as an improver of the soil. Now I am not fond of so much flaming declaration; I like something positive, some exhibition of useful and fruitful facts of what has actually been done; and in order to settle the matter whether Mr. Bates or myself have been the greatest improvers, I will place my farm, though only a poor tenant, in competition with his farm. In the first place, to prove that my occupation is *naturally* as bad a soil as his farm is; and secondly, that by perseverance and good management he may have a good bite of grass early in April, almost any year. I had the last spring, and will engage to have the next, good grass in my pastures the first week in April this year. My stock of milch cows—more than twenty in number—were fed with hay only mornings and nights, after the time last named. Though my farm is at least 500 feet above the level of the sea, some of my meadows have been mown twenty times within the last ten years. Yesterday I finished cutting a piece of grass on naturally cold clay land; it had been depastured until the first week in June, yet the mowers declared it to be the heaviest crop they had passed their scythes through this year.

It may be asked, how this improvement has been brought about? I answer, by draining and manuring. A great part both of mowing land and pasture I top drain with compost every year; add to this, I carry out, vigorously, principles already known, without spending either much time or money in doubtful inquiries or long disputed theories, which as yet are but little explained, and perhaps less understood.

My letter is already much longer than first intended, but to-day being rainy, and my operations almost at a stand still, allow me to proceed with a few remarks; in these, Mr. Editor, the tug will mostly lie between myself and you; however, I pledge my honour—if a tenant farmer is allowed to have any—not to be intentionally offensive, but at the same time I must unreservedly state my own views.

In the *Express* of August 2nd, I see much commendation of a paper written by Mr. Grey, on the agriculture of Northumberland; the paper in question may be a very useful one—I have not yet seen the Journal—and Mr. Grey may be a great improver; but, Sir, I have more than once seen individuals lauded by the press for their good doings in agriculture, but when I have gone to see their handy work, and to make strict inquiries for the good effects of their labours, I have frequently been disappointed, and found nothing more, or at least very little more, than a plausible letter written or plausible speech made, on some convivial occasion; however, I do not wish to be understood as intimating this to be the case in Mr. Grey.

I find, Sir, that Mr. Grey and you are quite agreed as to the means which must ameliorate our agricultural practice. Mr. Grey says, to effect this important end, the culture of the mind must precede that of the land; he also, with you, Sir, hails the new era which is now opening upon us, when wealth and intelligence lead the pursuit; these, Mr. Editor, seem powerful arguments, but just answer me this question:—from whom have the improvements emanated which have obtained within the last twenty years—is it the wealthy proprietors, is it the learned professors, Drs. F. L. S's, F. G. S., F. R. S., &c., &c.? I say, no such thing. The wealthy proprietors have done but little comparatively; the learned professors nothing at all, or nothing to any practical purpose. How correct are your own words, Sir!—*the grand desideratum of basing the practice of agriculture upon scientific principles, it must be confessed, has as yet made but small progress!*

Liebig's organic chemistry has been greatly applauded for the assistance it would render general practice; indeed we were told by a learned Doctor and profound personage, that a new era in this universal and (to me) delightful art, might be dated from the day Liebig's work appeared; but what is the fact? I call upon all those who have subscribed to such a belief, to point out in Liebig's production one single truth heretofore unknown, which he has now developed, and at the same time made of more immediate application to practical purposes. We have had Professor Johnston lauded to the skies for the lectures he has been giving at different places; yet he comes to the great meeting at Liverpool, and there talks absolute nonsense, and what any practical man can easily prove to be nonsense. We have lawyers successful with prize essays on agricultural subjects, yet perfectly incompetent to direct the simplest operation connected with rural art. If we look all around, read the different publications, lectures, letters, &c., &c. on agriculture, we may safely exclaim—well, if agriculture is not keeping pace or even leading the other branches of our national industry! Such an untoward circumstance is not owing to any lack of teachers, for indeed they are plentiful, but unfortunately many of them, though they engage to instruct others of known practice and experience, could not themselves economically manage the cultivation of a cabbage garden.

I now come to the question—who are the real improvers? I answer, the prudent, the watchful, industrious, persevering, and acute observing practical men; it is these who are the positive possessors of all immediate and available agricultural knowledge, and it is their efforts in the aggregate to better their own condition, from which instruction, example, and profitable systems will flow to the more dilatory and less enterprizing of their own order; and of the latter quality there will always be a tolerable number, not only in the agricultural classes, but in every other, whatever may be their rank or condition.

That our great proprietors are not improvers, we need only to observe the fact that very many of them during their whole lives never see their entire estate; within 500 yards of where I now sit I could lay my foot on part of a property containing thousands of acres—near good roads and good markets, yet almost worthless for want of efficient surveillance; indeed, the owner of this property never paid the greatest part of it the respect of one single visit; this is no case without parallel, I can find scores of the same character in the United Kingdom.

How many acres is a noble lord who made a long speech at Liverpool presumptive heir to, indeed we may say, in actual possession of? He presides annually at the anniversary of a well conducted local agricultural society; he also contributes a few pounds a year in the shape of subscriptions; but a mere nothing to one like himself so much interested; like many others of his rank, he does not, nor never did, take any active enquiries in such matters; still it must be admitted that he has, in his own case, arrived at a degree or pinnacle of agricultural information, which has been attained but by very few. See his speech at the great meeting in Liverpool—"*bad cattle are of less value than good, and if drains are stopped up, water will flow.*"

I have travelled hundreds of miles, Mr. Editor, to see agricultural improvements; I have walked over the occupations of the great proprietor, and indeed all others, down to the working farmer. I am well satisfied to be of that class, which, without comparing means, have done far the most in useful improvements; however, let it not be understood that I intend or aim at depreciating any order, however wealthy or however poor. I believe we have all duties assigned to us, and also the chances and opportunities of doing good.

I now conclude—and allow me, Sir, to apologize for trespassing so much on your better time und space. This communication, however unimportant, may give rise to interesting enquiries or discussions, the more so because it is from the pen of a plodding farmer, and in sincerity, whose object is the truth—neither favour to the scientific professor, the great proprietor, nor to those of my own condition: and the main cause of writing this is, because I have seen and continue to see, in certain crawling scribblers, a disposition to depreciato, and even deprecate the working farmers, by continuously holding them up as a body not having reasoning powers or common faculties, but so stupidly prejudiced in their daily pursuits as scarcely to believe in the most palpable facts connected with their immediate interests and circumstances; and not only is there an attempt made of this kind, but also to attach that merit and importance, which is their own due, to the ability of the proprietors or the sagacity of the learned professors, which neither the one nor the other have the least title or just claim to.

I am, Sir, yours very respectfully,

A LANCASHIRE AGRICULTURIST,

August 6, 1841. Near Manchester.

FOURTH ANNUAL MEETING OF THE YORKSHIRE AGRICULTURAL SOCIETY, AT HULL,

AUGUST 4.

JUDGES OF STOCK, &c.

FOR HORSES.—Mr. Robert Smith, Acaster Malbis; Earl Spencer; Mr. Christopher Ellerby, Whitewell.

FOR CATTLE.—Mr. Hunt, Dilston, Newcastle; Mr. George Davidson, Acomb, Hexham; Mr. J. Wright, Chesterfield.

FOR SHEEP AND PIGS.—Mr. P. Skipwith, Aylesby, Grimsby; Mr. John Newton, Howbridge, Malton; Mr. Hugh Watson, Keilor.

FOR IMPLEMENTS.—Mr. Peter Fairbairn, Leeds; Mr. Stevenson, Ranston, Boroughbridge; Mr. Wheatley, Neswich, Driffield.

Premiums awarded by the judges:—

SHORT-HORNED CATTLE.

CLASS I.—For the best bull of any age—Thomas Bates, of Kirkleavington, Yarm, for his bull, 4 yrs. 7 mos. old, the winner at Liverpool...... £30

For the second-best bull—R. M. Jaques, of St. Trinians, Richmond, for his bull Clementi (well known).................................... 10

21 entries. James Watson's white bull, of Wauldby, near Hull, was greatly admired, as were many others. The judges commended the whole of the stock shown in this class as very good.

CLASS II.—For the best two years old bull—R. M. Jaques, of St. Trinians, Richmond, for his bull Clementi, the winner in the 1st class 20

For the secnnd-best two years old bull—William Brandham, of Dringhoe, Beverley 01

The judges spoke in commendation of the other animals in this class. There were 10 entered.

CLASS III.—For the best yearling bull—Thomas Bates, of Kirkleavington, Yarm, for his bull Duke of Cambridge 20

For the second-best yearling bull—J. M. Hopper, of Newham, Stockton-on-Tees, for his bull Newham 10

Five entered. The judges commended the whole of the stock in this class also, especially the bull shown by Mr. Booth.

CLASS IV.—For the best bull calf—Jonas Whitaker, of Burley, Otley, for his bull calf Lord Adolphus Frederick 10

For the second-best bull calf—Earl Spencer, of Wiscton, Bawtry, for his bull calf Zenith, by Sweet William 5

12 entries. The bulls in this class were generally commended by the judges; R. M. Jaques's bull Clementi was much admired.

CLASS V.—For the best cow of any age, in calf or milk—John Booth, of Killerby, Catterick, for his cow Bracelet, by Raspberry, 4 yrs. old.... 20

For the second best cow of any age, in calf or milk—John Collins, of Danthorpe, Hull, for his cow Madame Grisi, in calf, 10 yrs. old £10

The cows in this class were generally commended by the judges. Nine entered.

Class VI.—For the best three years old cow, in calf or milk—Thomas Bates, of Kirkleavington, Yarm, for his cow by Belvidere, own sister to Duke of Northumberland 15

For the second-best three years old cow, in calf or milk—Thomas Bates, of Kirkleavington, Yarm, for his cow by Belvidere 5

The judges commended the cow shown by William Torr, jun., of Riby, Caistor.

Class VII.—For the best two years old heifer, in calf—Thomas Crofton, of Holywell, Durham, for his heifer 15

For the second-best two years old heifer, in calf—John Booth, of Killerby, Catterick, for his heifer Mantilina 5

The judges generally commended the animals in class 7, particularly Mr. Jaques's Mermaid. Eight entered.

Class VIII.—For the best yearling heifer—Henry Watson, of Walkeringham, Gainsborough, for his heifer Princess Royal 10

For the second-best yearling heifer—Jonas Whitaker, of Burley, Otley, for his heifer Lady Elizabeth.................................. 5

Nine entries. The judges highly commended the animals in class 8.

Class IX.—For the best heifer calf—Thomas Crofton, of Holywell, Durham, for his heifer calf Matchless, calved 27th August, 1840...... 10

For the second-best heifer calf—J. W. Foster, of Clapham, Settle, for his heifer calf Miss Dawson, calved November 10th, 1840............ 5

11 entries. The judges very highly commended the animals in this class generally.

Class X.—For the best fat ox, under four years of age—James Watson, of Wauldby, Hull, for his ox by Belshazzar, weight 130st., calved Feb. 24, 1838, fed on grass, beans, meal, and linseed cake 10

Three entries. Only one shown.

Class XI.—For the best fat ox, under three years of age—James Watson, of Wauldby, Hull, for his ox by Belshazzar 10

Richard Dudding's ox, of Panton, Wragby, 2 yrs. 7 mos. old, very fine.

Class XII.—For the best fat cow or heifer, of any age—Christopher Rawson, of Hope House, Halifax, for his ox, 7 yrs. old, grass fed and half a cake a day 10

Six entries. This class also was generally commended by the judges.

LEICESTER SHEEP.

Class XIII.—For the best shearling ram—John Kendall, jun., of Eastness, Malton............ £20

For the second-best shearling ram—John Borton, of Great Habton, Malton........................ 10

Class XIV.—For the best ram of any age—John Kendall, jun., of Eastness, Malton.............. 15

For the second-best ram of any age—George Robinson, of Carnaby, Burlington 7

Class XV.—For the best pen of five ewes—W. R. Eurnshaw, of Whitley, Ferrybridge 10

For the second-best pen of five ewes—Henry Hill, Sledmere Field, Driffield 5

Class XVI.—For the best pen of five shearling wethers—Henry Hill, of Sledmere Field, Driffield 10

For the second-best pen of five shearling wethers—John Foster, Southburn, Driffield 5

Class XVII.—For the best pen of five shearling gimmers—Mrs. Hester Edwards, of Market-Weighton 10

For the second-best pen of five shearling gimmers—Henry Hill, of Sledmere Field, Driffield...... 5

PIGS.

Class XVIII.—For the best boar, large breed—George Harker, Sunderlandwick, Driffield.... 5

For the second-best boar, large breed—William Tindall, of Keyingham, Hedon £2

Class XIX.—For the best sow, large breed, in pig or milk—John Bricklebank, Hull 5

For the second-best sow, large breed, in pig or milk—Wm. Johnson of Preston, Hedon 2

Class XX.—For the best boar, small breed—Rev. John Higginson, of Thormanby, Thirsk........ 5

For the second-best boar, small breed—William Torr, jun., of Riby, Caistor 2

Seven entries.

Class XXI.—For the best sow, small breed, in pig or milk—Rev. John Higginson, of Thormanby, Thirsk 5

For the second-best sow, small breed, in pig or milk—Wm. Dickinson, of Rooss, Patrington .. 2

Eleven entries.

Class XXII.—For the best three store pigs, from four to nine months old—Rev. John Higginson, of Thornby, Thirsk......................... 5

No competition for the second prize.

HORSES.

Class XXIII.—For the best stallion for hunters—R. F. Shawe, of Brantingham, Hull, for his stallion Mercury, 19 yrs. old................... 10

For the second-best stallion for hunters—John Watson, of Shipton, York, for his stallion Slashing Harry, 6 yrs. old 5

Class XXIV.—For the best stallion for coach horses—Botterill Johnson, of Frodingham Bridge, Driffield, for his stallion Falcona 10

For the second-best stallion for coach horses—Richard Waller, of Welburn, Whitwell, for his stallion Granby, 3 yrs. old................... 5

Eleven entered.

Class XXV.—For the best stallion for roadsters—John Harrison, of Cottingham, Hull, for his stallion Harkaway 10

For the second best stallion for roadsters—William Stubbs, of Market-Weighton, for his stallion Rattler.................................. 5

Messrs. Fosters' fine horse Young Merry-Legs, by Merry-Legs was much admired. Five entered.

Class XXVI—For the best stallion for agricultural purposes—Thomas Roydhouse, jun., of Hedon, for his stallion Young Active, 7 yrs. old (has 7 medals) 10

For the second-best stallion for agricultural purposes—The Executors of Joseph Burtt, of Welburne, Grantham, for his stallion Trusty 5

Seven entered.

Class XXVII.—For the best mare and foal for hunting.—R. H. Sagar, of Kirkstall Hall, Leeds, for the best mare, 8 yrs. old, grey 5

For the second-best mare and foal for hunting.—W. H. R. Read, of Hayton, Pocklington, for his mare, 10 yrs. old, grey 2

Five entered.

Class XXVIII.—For the best mare and foal for coaching.—Marmaduke Walker, of Bossal, Whitwell, 7 yrs. old, grey 5

For the second-best mare and foal for coaching.—John Fewson, of Twire House, Hedon, 8 yrs. old, bay 2

Seven entered.

Class XXIX.—For the best roadster mare and foal.—Christopher Jordison of Lockington, Beverley, 6 yrs. old, dun colour 5

For the second-best roadster mare and foal.—Rev. Luke Dennis, of Beverley, 15 yrs. old, won at Beverley this year 2

Class XXX.—For the best mare and foal for draught.—Thomas Bentley Locke, of Hessle Mount, Hull, 15 yrs. old, bay 5

For the second-best mare and foal for draught.—Robert Briggs, Anlaby Road, Hull, 12 yrs. old, dark bay 2

Class XXXI.—For the best three yrs. old hunting colt.—Thomas Shepherd, of Skeffling, Hull, by Paul Pry 5

No competition.

Class XXXII.—For the best two yrs. old hunting colt.—Joshua Ingham, of Blake Hall, Mirfield, for his colt by Viator, dam by Smolensko	£5
For the second-best two yrs. old hunting colt.—Benjamin Dunn, of Winestead, Patrington	2
Class XXXIII.—For the best three yrs. old coaching colt.—William Johnson, of Brigham, Driffield, for his colt by Paulinus	5
For the second-best three yrs. old coaching colt.—Thomas Hart, of South Frodingham, Patrington, for his colt by Brutandorff, dam by Truth	2
Class XXXIV.—For the best and second-best coaching colt	None
Class XXXV.—For the best three yrs. old hackney colt.—George Midgley, of Wassand, Hull, for his colt by Trumpater	5
For the second-best three yrs. old, hackney colt.—Matthew Piercy, of Lockington, Beverley, for his colt by Orion	2
Class XXXVI.—For the best two yrs. old hackney colt.—John Harrison, Cottingham Hall, Hull, for his colt Primo, by Primo	5
For the second-best two yrs. old hackney colt.—William Labourne, of Huggate, Pocklington, for his colt Young Fireaway, by Fireaway	2

SHEPHERD.

To the shepherd, being an annual servant, who shall have lost the smallest proportionate number of ewes from those that produced lambs in 1841, the number of the flock not being less than fifty.—A. Middlemiss, servant with Samuel Judd, York	5

There were nine competitors entered, each possessing great merit.

ROOTS, GRAINS, AND SEEDS.

For new or improved varieties of agricultural roots, grains, and other seeds, in various sums.—William Stickney, of Ridgmont, Hedon, gigantic clover	£10

The judges also mentioned with praise several varieties of ryegrass and clover seeds, two varieties of turnip seed, shown by George Whitworth, of Acre House, Caistor.

EXTRA STOCK.—CATTLE.

A roan ox, calved 15th May, 1839; a red and white steer, calved 30th April, 1836; a white steer, calved 27th of May, 1839; a white bull, calved 13th of March, 1841.—R. Fleetwood Shawe, Brantingham, Hull	£10
A red and white ox, calved June, 1837; a roan steer, calved 22nd April, 1838; a white steer, calved 3rd May, 1838; a roan steer, calved 1st March 1839.—James Watson, Wauldby, Hull	8

SHEEP.

One three yrs. old ewe.—W. Allen, of the Lodge, Malton	2

PIGS.

A sow, 28 weeks old.—Rev. John Higginson, Thormanby, Thirsk	2

HORSES.

A bay hunting mare, 3 yrs.—Rev. L. Dennis, Beverley	3*l*. 3s.

SWEEPSTAKES.—CATTLE.

For the best cow of any age.—Francis Gibbes, of Harewood, near Leeds	£2

Four competitors.

Essay.—A premium for the best essay on the laying down of grass land was awarded to Charles Howard, Esq., the Hon. Sec. to the Society.

PRIZES FOR IMPLEMENTS.

Division I.

To Messrs. Ransome, of Ipswich, for the best plough for general purposes	£10
To Messrs. Barrett and Ashton, of Hull, for Howard's iron plough	5
To Mr. Crosskill, of Beverley, for his cultivator	10
To Messrs. Ransome, for Biddell's scarifier	5

Division II.

To the owner of the best drill for corn and general purposes Awarded to Wm. Stamford, Burton, Pidsea.	10
To the owner of the best chaff-cutter Awarded to Wm. Crosskill, Beverley.	£5
To the owner of the best horse-hoe or scuffler Awarded to Joseph Scurrah, Crake Hall, Bedale.	5
To the owner of the best turnip-cutter No competition.	5
To the owner of the best thrashing machine Awarded to Mr. Crosskill, Beverley.	10

Division III.

To the owner of any other new and improved implement No competition.	15
For the best turnip-cutter No competition.	5

Award.

Ransome's turnwrest	5
George Legard's horse-hoe	5
Bigg's sheep-dipping apparatus	5
Torr's drill for small seeds	5

For new or improved varieties of agricultural roots, seeds, &c., 10*l*.

First, George Whitworth, Acre House, Caistor, for several varieties of rye-grass and clover seeds, 5*l*.

Second, Wm. Stickney, Ridgmont, Hedon, for *meliota maxima*, or gigantic clover, 3*l*.

ILLUSTRATIONS OF THE BREEDS OF THE DOMESTIC ANIMALS OF THE BRITISH ISLANDS.

By David Low, Esq., Professor of Agriculture in Edinburgh University, &c.

London: Longman, Orme, and Brown.

The eighth part of this valuable work contains portraits of the polled Suffolk breed of cattle, the Devon breed, the Sussex breed, and the Glamorgan breed. The first mentioned breed possesses one property in high perfection, that of milking well on common food; but this one quality does not entitle them to a prominent place among the improved breeds, and well-managed attempts to improve them have been obliged to give way to others possessing more of the profitable qualities. The specific colour is dun, and though resembling the Scotch galloway breed in being horney, they are now considered to possess very distinct characteristics.

The Devon breed is well known, and has grown much into repute lately. The quality of the beef and milk is excellent, but neither are produced in great quantity, though the former properties uphold the place of the breed. It is fitted for sheltered districts and for pastures hardly rich enough for Herefords and shorthorns, but it may be questioned if a smaller symmetrical breed will not pay as much in any situation. The breed is peculiarly adapted for active labour in cart and plough, though their small size requires a number to work one implement. Grazing is the highest quality they possess; for the dairy or rearing veal, they are much behind both the crosses and the indigenous varieties. The Sussex breed is a larger variety of the Devon, all evidently belonging to the same original stock. The chief recommendation is for the yoke, for which purpose they have no equal in Britain; but as the mode of tilling land with cattle is wearing out, that property will cease to exist. For other purposes they possess no peculiar recommendation that cannot be obtained in greater variety in other breeds.

The Glamorgan breed very much resembles the cattle found in many northern districts in Scotland, but possessed of superior qualities, probably arising from the warmer latitude. Like all indigenous breeds of any note, the milking qualities are excellent, and they have been much improved in other respects. The importation of other breeds continually, tend to narrow the space occupied by the natives, though they possess the very great advantage of being bred of the country, the former generally dispossess them. The author's remark is a very just one, that a very useful breed of stock may be got in any country by judicious selection, and in many cases more profitable than costly importations. The great neglect shown on this point produces the incongruous assemblage of illshapen animals to be seen in all our markets; for with all the fine breeding that has been going on, a few persons only have got the improved herds in possession.

The portraits are executed in the usual fine style, and the author supports his neatness of description and perspicuity of statement.

THE FLORICULTURAL MAGAZINE FOR AUGUST.

Edited by Robert Marnock,
And Published by Tyas, Paternoster Row.

This publication is embellished with a painting of the "Statice Dickinsonii," and contains the usual quantity of valuable matter; the short remarks addressed to young gardeners seem most appropriate. The miscellanies and the monthly calendar are not the least valuable of this cheap publication.

The above mentioned plant was imported from the Cape of Good Hope in 1837, by Capt. Price, R. N., and has been brought into the flowering state by Mr. Dickinson, nurseryman, at Guildford. It grows on rocks and cliffs, and has been raised in England, in a turfy sandy loam, and watered with a brine of urine and water. It would appear to make a valuable addition to our dwarf shrubby plants.

A THIBETAN YAK.

The Thibetan Yak brought to Calcutta by Mr. Huffnagle is one of the most curious animals that we have ever seen. It is at present on the premises of Mr. Adam F. Smith, and the proprietor courteously permits those who are fanciers of such objects to inspect this tenant of the Himalayahs. It seems a connecting link between three very different zoological genera. It has the head of an ox, the body of a goat, and the tail of a horse. Its osteology differs from that of the ox, having one more rib. The cold climate of which it is a native, its resting place being among the snow, renders Calcutta particularly trying to this animal. It is a mere object of curiosity, but on the same premises Mr. Huffnagle has four Lepcha cows, from Darjeling, which we consider likely to improve our breed of low-land cattle far more permanently and effectively than any importation that has yet been made. A bull of the same stock would be a still more valuable gift to the vicinity. These cows have the slightest possible rudiment of a hump, and the ears are rather large, thin, and pendulous, as in the Nagore breed; otherwise in frame, in fineness of head, lightness of bone, and superiority of udder, they approach closely to some of our best English breeds. To look at the black cows a casual observer would conclude that they were of the best kind of the Welsh breed: whilst the one which is brindled, white and brown, looks much like a Devonshire. They are altogether a most promising source from whence to derive improvement to our Bengalee cow and ox; and the remark naturally arises to the mind of every one who inspects this really very superior breed, how has it arisen that these animals have until now remained unknown within a journey of seven or eight days from Calcutta? The only answer is—most people go through life with their eyes shut. We hope Mr. Huffnagle will fully carry out his intention of breeding from these cows not only by a Nagore but by an English bull, and our desire is still greater, that a Lepcha bull should be brought to the presidency. We saw the cows during the hottest period of the day, and, though in not the best sheltered of sheds, they did not seem to suffer from the heat; whilst the Yak, though in a much cooler place, was panting extremely.—*Calcutta Courier, May* 22.

A day or two since we noticed the Yak, or Kashgow, brought to Calcutta by Mr Huffnagle, and which may be seen on the premises of Mr. Adam F. Smith. At that time we had been unable to meet with any notice of its habits, but since then we have found the following highly interesting particulars in a work just published—"Lieutenant Wood's Journey to the Source of the Oxus."

"The Yak is to the inhabitants of Thibet and Pamet, what the rein-deer is to the Laplander in northern Europe. Where a man can walk, a Kashgow may be ridden. Like the elephant, he possesses a wonderful knowledge of what will bear his weight. If travellers are at fault, one of these animals is driven before them, and it is said that he avoids the hidden depths and chasms with admirable sagacity. His footing is sure. Should a fall of snow close a mountain pass to man and horse, a score of Yaks driven ahead answer the purpose of pioneers, and make, as my informant expresses it, '*a king's highway.*' In this case, however, the snow must have recently fallen, for when once its surface is frozen and its depth considerable, no animal can force its way through it. Other cattle require the provident care of man to subsist them through the winter. The most hardy sheep would fare but badly without its human protection, but the Kashgow is left entirely to itself. He frequents the mountain slopes and their level summits. Wherever the mercury does not rise above zero, is a climate for the Yak. If the snow on the elevated flats lie too deep for him to crop the herbage, he rolls himself down the slopes and eats his way up again. When arrived at the top he performs a second summerset, and completes his meal as he displaces another grove of snow in his second ascent. The heat of summer sends the animal to what is termed the old ice, that is, to the regions of eternal snow, the calf being retained below as a pledge for the mother's returning, in which she never fails. In the summer, the women, like the pastoral inhabitants of the Alps, encamp in the higher valleys, which are interspersed among the snowy mountains, and devote their whole time to the dairy. The men remain on the plain, and attend to the agricultural part of the establishment, but occasionally visit the upper stations, and all speak in rapture of this summer wanderings. The Kashgows are gregarious, and set the wolves, which here abound, at defiance. Their hair is clipped once a year in the spring. The tail is the well known Chowry of Hindustan, but in this country its strong, wiry, and pliant hair is made into ropes, which, for strength, do not yield to those manufactured from hemp. The hair of the body is woven into mats, and also into a strong fabric which makes excellent riding trousers. The milk of the Yak is richer than that of the common cow, though the quantity it yields be less."—May 26.

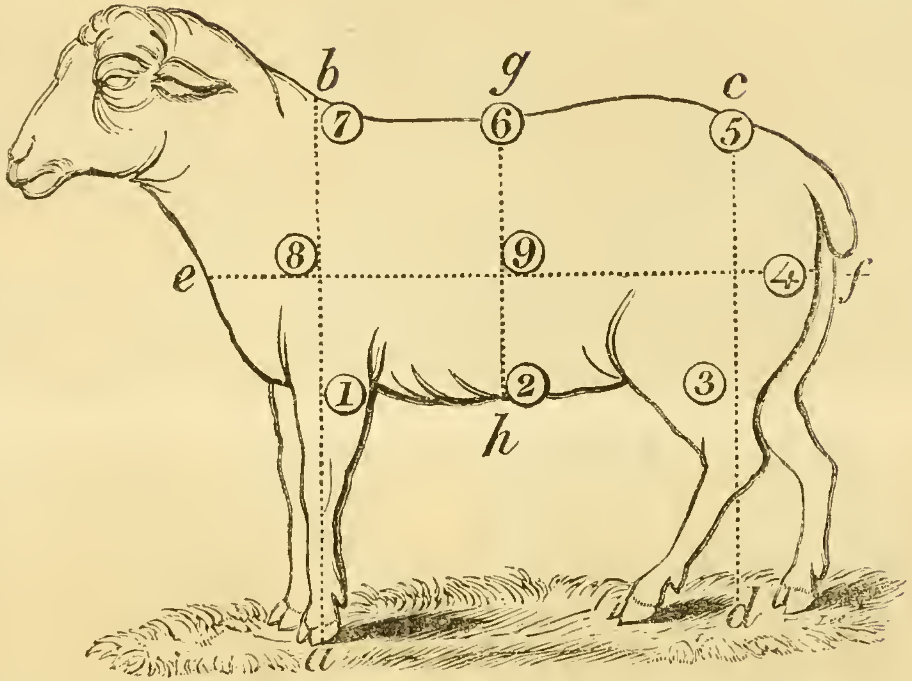
NUMERICAL REPRESENTATION
OF THE
PRINCIPAL POINTS FOR JUDGING OF A FLEECE OF WOOL,

For the Society of German Landholders, to be forwarded one month prior to the opening of the Meeting.

[Some part of the subjoined statement might have been omitted, but we have given the whole for the purpose of showing the attention which the Germans give to the fleece.—ED. F. MAG.]

1, 2, 3, 4, 5, 6, 7, 8, 9, shew the parts of the fleece from which the samples for determining the quality and for the sample-card are to be taken.

The perpendicular lines *a b* and *c d* are to shew the height.



The horizontal lines *e f* shew the length, the lines *g h* the circumference of the body. The measurement to be taken after shearing, as also the weight of the animal.

Name of the Proprietor.	No. of the animal.	Dropped.			Shorn.			Age of the animal on the day of shearing.	Of the animal.						Day of Shearing,		Age of the wool in days.	Length of the wool.				Degree of fineness of the wool, according to Köhler's scale, on the parts Nos.			Weight of the wool unwashed.	Loss of wool by washing per cent.	Weight of the pure wool.	Weight of the pure wool of 365 days' growth.	Assortment of the fleece, and its value.	Value in London.			REMARKS On the keep of the sheep, and quality of the wool.—Opinion of the value of the animal by breeders and wool-dealers where produced.
									After shearing.				Gender	Breed				Unwashed		Washed As per No. 9.										Per lb. in average.	The weight of the body.		
		In what part of the globe	Country	Place	In what part of the globe	Country	Place		Weight	Height	Length	Circumference			1839	1840		Apparent	Real	Apparent	Real	1	9	5							without regard to	as regards	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34

REMARKS ON THE THIRTY-FOUR PARTS OF THE ABOVE TABLE.

Art. 1. The name of the proprietor must not be concealed.

Art. 2. Each sheep from which a fleece has been shorn for the purpose of transmission to the society, must be either branded or otherwise permanently and conspicuously marked, and not alone with its own number but also the date of the year 1840; and it is particularly to be wished, that fleeces from the same sheep may be sent in the ensuing year, especially when the fleece of the present year is favourably reported.

Art. 3, 4, 5. Must report the climatic influence.

Art. 6, 7, 8. The same.

Art. 9. The age of the sheep must be correctly given, in consequence of its great influence on the wool; the wool of lambs and yearlings have not the same normal quality; even the third shear is not sufficient at all times—it is, however, admissible.

Art. 10. The weight of the animal is to be taken in the morning, fasting, immediately after shearing.

Art. 11, 12. The height and length are easily to be taken with a sliding standard. Also

Art. 13. The circumference of the body with a tape on which inches are marked, all however after shearing. N.B. Where in the table reference is made to weight and measure, those which are customary in the country must be employed, these can afterwards be decimally reduced to about the French scale; from the weight and size of the sheep, the necessary sustenance can be comparatively ascertained.

Art. 14. Ewes can only be received under peculiar circumstances, as their condition can seldom be taken as a rule. Wethers cannot be received at all; the fleeces of the tups determine the quality.

Art. 15. The breed must be inserted, and it will then be plainly seen of what importance the mention of the breed is.

Art. 16, 17. One of the principal points is the age of the wool, with an attest that the shearing in 1839 was good and shorn as closely as possible; accurate and scientific results can alone be obtained from wools of the same age, viz., of 365 days' growth. A deviation from this rule causes an unavoidable error. That the age of the wool may be exactly 365 days, it is merely necessary to shear for this purpose on the same day in every year.

Art. 18. Is the result of Art. 15 and 16.

Art. 19, 20, 21, 22. It is desirable that all fleeces should be sent in unwashed, for the purpose of shewing the length of the wool in this state; all stretching of the same must be avoided, and this applies to washed wools; and in both cases to be taken from the part No. 9.

Art. 23, 24, 25. No. 1 produces usually the finest wools, No. 9 a normal sample of the fleece, No. 5 is, after No. 4, the coarsest. All three Nos. together a good average. The samples to be used in ascertaining the precise quality, must be carefully shorn clean from the skin about two inches in diameter, for the purpose of allowing 100 sample-cards to be filled for the various uses of the society; each sample must be carefully enclosed in paper marked with the number of the sheep and that of the part (see the sketch) from which the wool is drawn. "Köhler's" scale of measurement is particularly recommended for proving the degree of fineness, but that of "Gravert's" and others are also admissible.

Art. 26. Unwashed wool gives a better idea of the feed and keep of the sheep than when it has been washed on the animal; it would however be interesting to the Society if one-half of the fleece could be sent in washed, and the other half unwashed, to enable them to judge of the result of the different methods of washing in various districts.

Art. 27, 28, 29. The quantity of pure wool in a fleece, when the whole is wished to be preserved in an entire state, is easily and accurately ascertained by the so-called "bag-wash," which can be applied several times. To effect this it is necessary to pluck about 100 grains of wool from the different parts of the fleece, make them in small parcels and wash them in a sufficiently warm and strong soap-lees in a gauze bag carefully closed; this may be repeated, and when the wool is entirely freed from grease, sand, &c., and dried in an equal temperature, and after shaking and beating, particularly the ends where the dirt-knots hang, a singular coincidence will be found in the loss of the various portions of 100 grains in one fleece; this is a simple process: the quantity of grease and dirt altogether contained in an unwashed fleece may be ascertained by the loss of weight the wool sustains when so washed.

Art. 30. The fleeces might be sorted, valued, and washed, as is customary in the manufactories, either by Mr. Klaus, of Pirna, or according to his method (see the "Mecklenburgischen Annalen in Betreff der Thierschau von 1838 u. 1839"). Mr. Jeppe, of Rostock, is recommended for determining the quality of the wool, explaining the bag-wash, and preparing the wool card.

Art. 31, 32, 33. In this respect the rules employed for some years in Mecklenburgh in the examination of sheep are to be followed.

Art. 34. These remarks are especially important to the breeder, and show the respective condition, views, and wants of the several districts. The columns 1 to 18 and 34 are to be filled up in the country where the sheep are bred, without examining the fleece; the columns 19 to 33, at the place of meeting of the Society, after examination of the fleece, and as far as possible before the time of meeting, so that the results of the examination and the samples may be then laid before the Society. The columns 2, 9, 10, 11, 16, 17, 18 require a strict control, and attestations must be produced; a mistake will do much mischief, and mostly so to those who commit it. The surest proof that the breed of the animal is genuine and continues in its descendants, is best shown by examination of the latter, which is the next and an important step to be taken at a future period. The results of this table with sample-card raises all breeders to a high point, to which they could not otherwise attain. The whole art of wool production is thus clearly displayed in a small space; each person can thus see the most profitable side of his circumstances, and be guided thereby. There is no absolute "best," but merely a relative one; and it is greatly to be wished that the most apparently valuable specimens of a district be sent in truly and authentically, in doing which every one has an interest, and the relatively "best" is every where to be found.

(The foregoing is a translation from the German.)

ON THE COMPARATIVE VALUE OF CERTAIN COMMON AND ARTIFICIAL MANURES FOR RAISING GRAIN AND GREEN CROPS.

BY MR. WILLIAM ADAM, ADVOCATE, ABERDEEN.

(*Prize Essay of the Highland Society of Scotland.*)

Knowing from experience that I could raise a pretty good crop of turnips on a light moorish soil, on a very poor retentive subsoil that was reclaimed from heath only about ten or twelve years ago, and which had not been thorough-drained, with *three* street dung-hills, of about six good single cart-loads each, and perhaps a still better one, with the same quantity of mixed street and cow dung, or with ten or twelve loads of such mixed dung, and about ten bushels of bones; and that a pretty good oat crop could be raised the following year, on ground so manured for turnips, by putting upon it, at the time of sowing the oats, two police dung-hills; and estimating the average price of a street dung-hill, including cartage to the farm, at forty-two shillings, or about seven shillings per load, (the buying price of the dung-hill being averaged at twenty-eight shillings, and the cartage at fourteen shillings)—I was desirous of making the value of the artificial manures to be used in this experiment bear some proportion to the value of these manures in common use; and, accordingly, I ordered as much of each of those kinds of artificial manures as I thought would, including freight and cartage, be equal in value to three street dung-hills, or as nearly so as possible, and they were sent me at the following cost:—

Clark's desiccated compost, 2 casks, containing 6 qrs., (including casks), at 15s. per quarter............	£4 10 0	
Sea freight and cartage to the farm..................	1 3 9	
		£5 13 9
Lance and Company's carbonized humus, 3 casks, containing 45 bushels, at 1s. 9d. per bushel......	£3 18 9	
Casks..................	0 11 0	
Sea freight and cartage to the farm..............	1 3 9	
		£5 13 6
Owen's animalized carbon, 2 casks, containing 25 cwt., at 65s. per ton....	£4 1 3	
Casks..................	0 6 0	
Sea freight and cartage to the farm..............	1 3 9	
		£5 11 0
Poittevin's patent disinfected manure, 45 bushels, at 13s. 6d. per quarter..	£3 15 11	
Casks, 13s., cartage, 5s...	0 18 0	
Sea freight and cartage to farm................	1 3 9	
		£5 17 8

And as it was my object to have a comparative trial made of the value of all these different sorts of manures, not only in reference to one another, but also in reference to the other manures after mentioned, for raising oats as well as turnips, I got each kind of these artificial manures divided into *three* equal parts, and applied them on two fields of oats, and one field of turnips, as follows, viz., one-*third* of each kind *on half an acre* of each of the two fields intended for oats, and one-third of each kind on a *quarter* of an acre of the field for turnips.

It should be mentioned that the first field of oats was in turnips the preceding season, and had been fairly manured with a mixture of cow and street dung, and bond-dust, although, from the wetness of the season, the crop of turnips was inferior; and the second field had borne a crop of oats the preceding season, having been induced, contrary to my usual practice, to sow it down this season with grass seeds, along with a second oat crop in order to get it brought into the same shift with the adjoining field, for the sake of water; accordingly the cost of manuring each half acre of these fields sown with oats was as follows:—

The half acre manured with Clark's desiccated compost, was..........	£1 17 11
The half acre manured with Lance and Co's carbonized humus..............	1 17 6
The half acre manured with Owen's animalized carbon..................	1 17 0
The half acre manured with Poittevin's patent disinfected manure..........	1 19 2
The half acre manured with street-dung at the rate of 6 single cart-loads to the half acre, at 7s....................	2 2 0
The half acre manured with well rotted cow and horse-dung also at the rate of 6 loads to the half acre, at 7s..........	2 2 0
The half acre manured with bone-dust at the rate of 13 bushels to the half acre, at 3s. 3d. per bushel..............	2 2 3
The half acre manured with soot, at the rate of 10 bolls, of 4 bushels per boll, to the half acre, price 1s. 10d. per boll.	0 19 2

The cow and horse-dung were slightly ploughed down about eight days before the crop was sown, and the other manures were harrowed in along with the seed, the whole being sown about the 17th of April, and the crop of both fields was reaped in the last week of September, the part of each of the fields manured with soot being some days later than the rest. From the very marked difference of the crops on the different parts of the field on which these manures were put, no one who saw them when growing, or after they were cut down, could for a moment hesitate as to which had the superiority, or at least in pronouncing that the crop raised by the soot and cow and street dung had greatly the advantage over that raised by the bone-dust and artificial manures.

The soot produced by far the best crop on each of the two fields in oats before mentioned, although the cost of it was only about half that of most of the other manures. The crop after the soot did not braird more readily, but after it got fairly up continued to keep before the others during the season, the oats growing on the sooted ground being distinguished by a healthier and darker green colour at the distance of more than half a mile; the crop was stronger and ranker in the straw, and when cut the bulk was evidently much larger than on the ground manured with either cow or street-dung, and, to appearance at least, a third more bulky than that on the ground manured with bone-dust and the artificial manures.

The crop after the cow and horse-dung, and that after the street-dung, seemed much alike when growing, and both were very superior to that after the bones and artificial manures, though inferior to that after the soot; but after being cut the bulk and richness of the crop seemed to be in favour of the street-dung. The crops after the bones and artificial manures were all alike inferior, and did not seem much, if any, better than that which was produced on a small part of the ground which had been sown without any manure at all; if there was any distinguishable difference, I should say that the bone-dust had rather the advantage of the artificial manures.

Again, as to the *turnip crop*, the same quantity of each of the artificial manures was applied to a *quarter* of an acre (imperial) of turnip ground as was applied to the *half* acre of oats. That is,

	£	s.	d.
The quarter acre manured with Clark's desiccated compost, cost	1	17	11
The quarter acre manured with Lance and Co.'s carbonized humus, cost....	1	17	6
The quarter acre manured with Owen's animalized carbon, cost	1	17	0
The quarter acre manured with Poittevin's patent disinfected manure, cost......	1	19	2½
No trial was made of soot as manure for raising turnips, although I now regret this, after seeing the effect it had upon the green crop; but, for the sake of the comparative trial, I applied bones *alone* to a quarter of an acre of ground for turnips (half-dust, half-drill) at the rate of 20 bushels per acre, which, at 3s. 3d. per bushel, cost for the quarter acre 16s. 3d. I had also from six to seven acres of turnips, manured at the rate of about 12 loads of mixed cow and street dung, and 10 bushels of bones per acre, which cost for a quarter of an acre about................	1	19	1½
And from five to six acres were manured with bone-dust and street-dung sifted together, and dibbled in at the rate of about 10 bushels of bones, and nearly double that quantity of street dung, per acre, and which cost for the quarter acre about	0	11	0

The turnips, manured with the mixture of cow and street dung and bones, were decidedly the best of the whole. They brairded thick and equal, and continued in a fresh and growing state. Those sown with dibbled bone-dust and street dung appeared next best, though not so equal, nor in any respect so good as the above.

Those sown with bones alone seemed very backward at first, and looked as if they would have been the worst of the whole, owing, no doubt, to the wetness of the season; but they continued gradually to improve, and became to appearance nearly equal to that sown with the dibbled bones and street dung.

Those sown with the artificial manures came up very quickly and regularly, and for the greater part of the summer maintained their superiority to those sown with the dibbled bones and street dung, and also to those sown with bones alone, but by the beginning of harvest their leaves began to turn yellow, and were left behind all the others. Of the turnips raised with the artificial manures, those raised with Owen's animalized carbon, and Poittevin's patent disinfected manure, appeared to be on a par, and were decidedly better than those raised with Clark's desiccated compost, and Lance and Company's carbonized humus. Of these last-mentioned two kinds, it is difficult to say which had the superiority; those after Clark's desiccated compost seemed to be rather the better, but those raised with Lance and Company's carbonized humus were fresher in the leaf. The grain, when thrashed out, and carefully measured, gave the following produce—

	Qr.	B.
1. The quantity on the half acre manured with soot, was	3	0
2. Do. on do. do., with cow and horse dung..............	2	3
3. Do. on do. do., with police dung	2	0
4. Do. on do. do., with bones.	1	4½
5. Do. on do. do., with Poittevin's disinfected manure	1	7
6. Do. on do. do., with Clark's desiccated compost	1	6½
7. Do. on do. do., with Lance and Company's disinfected compost.......	1	5
8. Do. on do. do., with Owen's animalized carbon	1	2

It may be proper to mention that the seed, when sown, (sandy oats), weighed 43lb. per bushel; and that the produce, when thrashed out and dressed for the market (not quite so well dressed as the seed), weighed from 41 to 42lb. per bushel; the grain raised by the street and cow and horse dung being the weightiest, and that raised by the soot and Clark's desiccated compost being the lightest.

GROWING OF TURNIP SEED.—A new, and, to all appearance, a profitable feature in the agriculture of our county, has displayed itself in the article of turnip seed. Mr. Imrie, seedsman, here, has had, this season, upwards of 20 acres of ground under cultivation with this description of crop, two of which might have been seen in the vicinity of the town, about half a mile along the road to Maybole; five were in Mr. Imrie's Nursery adjacent, and upwards of thirteen on the estate of Doonside. The mode of culture adopted by Mr. Imrie is as follows:—The seed is sown in June, and is treated as to thinning, weeding, &c., in the same manner as is commonly practised. In the following autumn, those intended for seed are transplanted in drills, nearly in the same manner, and with the same space between them as is done with potatoes; the manure used, being the common farm-yard compost. These rows are subdivided into squares of about half an acre in extent, with a sufficient path-way between each of these portions to allow a passage to those who are placed to keep birds from destroying the crop. It comes in flower about the beginning of May, and this is generally the time above all others, when it is more peculiarly exposed to the risk of damage from late frosts. With moderate weather it attains to its full growth in the month of July; and the warmer the weather may be after that period, the more favourable it is to the harvesting of the produce. Although Mr. Imrie has cultivated this kind of crop to a considerable extent for some time past, he has in no former season planted out such a breadth of ground with it; and we are happy to learn that his extensive experiment in field culture, this season, is likely to realize a profitable return; notwithstanding the outlay which the keeping up of a sufficient number of watchmen during the ripening period must necessarily require. During the last six weeks, no fewer than fourteen men and boys have been employed in protecting the crop from the ravages of the small birds, which are *destructively* fond of the seed; although that portion of it at Doonside did not require such attention. We learn that, as to quality, the seed is likely to be very superior; and if good drying weather intervenes, it will be ready for market in a few weeks. A great improvement is his method of drying the seed in the straw, suspended upon ropes in the field till ready for thrashing out and storing up; this mode being different from others generally practised among seed growers. This, it is supposed, contributes greatly towards the superiority of the seed.—*Ayr Advertiser.*

THE CORN LAWS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—Having been prevented from continuing the subject of the corn laws since my last, published in your paper on June 7, I now wish to show the working of a measure to produce the object then set forth, "of maintaining in this country a more equal and constant price, than the growth of the season and the delivery in the different parts of the year would otherwise allow." Not that I can claim any novelty in the proposition, as it has heretofore been very strenuously and ably advocated by yourself; but from the probable alteration in the corn laws in the next session of Parliament, it affords a most excellent opportunity for the re-consideration of the subject, especially under the new form of applying the old principle, whence to derive the above good.

It is by the substitution of equivalents, not only of corn, but also of the manufactured produce of that corn in the form of flour and biscuit, under the following conditions, restrictions, and limitations:—

1st. That British wheat, flour, and biscuit, should be allowed to be lodged in bond, to be considered afterwards as *bonded*, and subject to the same restrictions as if imported from abroad.

2nd. That certain ports should have the privilege of this trade, where persons possessing competent knowledge should be appointed to examine, and if found of the required quality, should give a certificate accordingly.

3rd. That this certificate be transferable by endorsement, and be only of use to free foreign wheat in any port of the United Kingdom, in the relation of — bushels of wheat, for the like quantity of British wheat previously put into bond; also — bushels of wheat for every — lbs. of fine flour, or — lbs. of white biscuit, or — lbs. of brown biscuit so deposited.

4th. That this certificate be available at the will of the holder, without consideration of, or restriction to, the place or the time of its being granted.

5th. That the wheat so freed be deemed British to all intents and uses.

To fully understand the proposition and its advantages, it only requires to point out the working of the certificate, and for this purpose is submitted a comparison between Dantzig and England during certain years, which comparison holds equally true with respect to any other of the great exporting corn districts of the continent, unless acted on by local and peculiar circumstances.

	per qr.		av. at Dantzig.		difference.	
	s.	d.	s.	d.	s.	d.
In 1822 the average of England was per qr.	43	3	29	1	14	2
In 1835 do.	39	1	22	6	16	7
For the first ten years of the present corn law, being from 1829 to 1838 inclusive......	56	3	34	2	22	1
In 1840...............	66	4	39	6	26	10

By the above it is shown that the greatest disparity between England and the foreign countries takes place when England imports the largest quantities of wheat—as in 1838 there were entered for home consumption about 1,800,000 qrs.; in 1839, 2,600,000 qrs.; and in 1840, 2,300,000 qrs. From which facts, I draw these deductions: that if we had the power of shipping British produce, and *of receiving a certificate to be allowed to free the equivalent in bonded wheat*, we should in such years of extreme agricultural *depression*, as 1822 and 1835, *export our own produce, and retain these certificates*, until our market, aided by these continual exports, had risen the price to the average and usual difference between England and the continental markets; but so soon as this true relation had been established, these certificates would have attained their *utmost value*, and would be made use of to introduce an equivalent quantity of bonded corn for the English flour, &c., exported, thereby preserve the *equality* in price, and prevent any further disposition for the rise in the price of home produce.

This result is obvious; because, if a person should retain a certificate without freeing its equivalent in bonded wheat longer than, or after it has become worth the average difference of about 22s. 1d. per qr., as shown by the preceding averages, for every week it is so held back—during a progressive rise in the English markets—the duties could be paid for in less money than 22s. 1d., therefore such certificate would become only worth such *reduced* duty.

This proposition would work equally well with *any system* of corn laws, or *any range* of duties.

It would create a steadiness in price here and on the continent, not only as relates to particular years, as above shown, but also as regards portions in those years, as in the winter and early spring, exports of flour and biscuit could be made from England, when it cannot be brought from many of the Baltic ports, which is the very period most convenient for the farmer to bring his corn to market, provided he could be assured of realizing a good and full average price. Nor would this temporary check to depression be attended with any ill effects to this country, as these certificates, floating over the market, would preclude the possibility of creating any undue and fictitious rise, as in periods of excited markets they would be used to free *all* the bonded corn then in this country, thereby bringing it into consumption when *most needed*, and not leave us, as at present, to go through a long period of high prices, and consequent suffering, when there are short supplies in the markets, and until the high averages have been so long maintained as to release the bonded corn at a moderate duty, which is likely to be the case at the present time, whereby we shall have the bonded wheat released just as the new wheats are coming into the markets, creating a very depressing fall when the farmer has the most grain to dispose of; in fact, withholding it when required, and introducing it only when it is no longer wanted. In addition to the above, the great advantage to the agricultural interest, of preventing periods of extreme or unusual depression, would require its adoption, even if it tended to the injury of some of the other interests in the state; but fortunately there exists no fear of any such injury, which was ably set forth by Mr. Young, in his evidence before the select committee for grinding foreign corn, wherein is also shown that the exports from America, taken from their statistical returns for the 49 years, from 1790 to 1838, amounted on an *average* to 877,806 brls., at all times worth from 1*l.* to 2*l.* 10s. per brl., and in many years their export flour trade was to the enormous value of and from 2,000,000*l.* to 3,500,000*l.* sterling for the year.

With the large number of vessels sailing, many in ballast, many but half ladened, to the countries (often our own colonies) importing such an immense value of bread stuff, when it could at all times be obtained as cheap, often cheaper, from England than from any other country in the world, *provided a law was passed carrying out the above proposition*, it becomes pretty evident there is an omission in not yet having legislated, whereby English merchants should be allowed to participate in such an extensive and desirable trade, which if in their hands would no doubt be further increased, if it were alone for this reason—that any vessel going hence to a warm climate, and the merchant wishing to ship flour, could be assured of being able to obtain it well prepared and quite *freshly made*; and this assurance is not to be had for money: if the flour be taken out of the bonding stores of this country, as the age of the flour is not known, all that can be ascertained, is, that on examination it is neither sour, nor out of condition, but it might be *both* within a month from its shipment; whereas if freshly made, it would be secure of keeping a long time in any tropical climate.

There are many persons sensible of the great good that would result from such a trade; and a petition was addressed to the House of Commons in 1840, from the merchants, shipowners, cornfactors, millers, biscuit-bakers, and other inhabitants of the city and vicinity of London, in which petition appeared the following paragraphs:—

"That no less than 18,000 tons of shipping annually resort to the port of Hamburgh for flour, while about 10,000,000lbs. weight of that commodity are annually exported from Dantzig, and a quantity nearly equal in amount from Copenhagen.

"That the greater part of this flour is taken for the use of the British colonies, which is attested by the fact that upwards of 15,000 tons of shipping laden with flour, annually leave the ports of Dantzig, Copenhagen, and Hamburgh, and that no less a sum than 75,000*l.* sterling is annually expended at the last mentioned port for flour and biscuit required for the supply of Newfoundland alone, as will appear by the official papers.

"That your petitioners deeply lament that, in consequence of the existing state of the law, the manufacturing, commercial, and shipping interests of Great Britain are wholly excluded from this important traffic, whereby the operations of commercial enterprise have been impeded—the investment of British capital in a lucrative branch of trade prevented—and our working classes deprived of an important means of employment."

I think, Sir, I have succeeded in making it clear, that before all other, the *agricultural* interest *would be most benefitted* by this proposition; that our colonies, our commerce, our capitalists would be benefitted; and finally, that every other interest, not directly feeling an advantage from the increased trade, would still have secured to them the infinite advantage of an *uniform* and *equal price in food*.

There are no end of good reasons why it should be granted, and but one that I have ever heard why it is withheld—a *fear of fraud on the revenue*; but would not an increase of commerce necessarily increase the revenue? Besides, does this fear prevent and *forbid* our trading in tobacco, spirits, &c., in which frauds are daily practised? But the great security against fraud is this:—it becomes necessary that you should smuggle *into* the Custom House, get the corn, &c., *under* the Queen's locks, have it examined by the proper officers before you can get a *certificate*, (and without this certificate the whole transaction becomes of no use); with the goods in the possession, and under the management of the Queen's officers, is such a thing as *fraud* possible?—Certainly not.

I should like to see, Mr. Editor, that a proposition of this sort was sometimes referred to, as I am perfectly satisfied that it requires only to be understood for the agriculturists to be fully sensible of the great advantages that would arise from its adoption, and which would necessarily induce them to give their whole interest and influence, until it was brought about.

I remain, Sir, yours very respectfully,

Havant, August 6th. S. H.

ON DESTROYING THE TURNIP FLY, IRRIGATION, &c., &c.

Sir,—A letter in your Journal of the 28th June, signed J. H., requesting information of the best means of preventing the ravages of the turnip fly, has to-day been brought under my notice. I have much pleasure in making known the means I use. I make a strong decoction of the young shoots of the elder tree; when cold, or nearly so, steep the seed in all night, and when dry, sow it as usual; and my crop has never failed.

With regard to artificial irrigation referred to in the preceding letter, I have used it with great success for years, and am satisfied it will amply repay any reasonable expenditure.

I am, Sir, your obedient servant,

Edward Churchill.

Calverley Park Hotel, Tunbridge Wells,
5th August, 1841.

ON THE CONSUMPTION OF BREAD.

Sir,—The writer in the *Gloucestershire Chronicle* has made the first attempt to cut down the consumption of wheat to meet a supposed supply; but a very little *honest* enquiry will suffice to shew its fallacy.

After many enquiries and some observations on the subject (and I would have others to do so likewise), I am fully convinced that 7lb. of flour per week for bread for each individual of our rapidly increasing population is the consumption; instead of 6lb. of bread, which would only require about 4lb. 11 ozs. of flour. The allowance to soldiers is 7lb. of bread per week, and sailors in the navy 7lb. of hard biscuit, exclusive of puddings and oatmeal, which form some part of their diet, and enter largely into the consumption of the family of the labourer. I have no doubt the annual consumption for each individual is (or ought to be) 1 quarter of wheat,* as that grain is now almost exclusively used for bread; its low price in 1834–5 having driven other kinds of corn out of consumption for that purpose.

A Commercial Friend to Agriculture.

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* 26 stones will be nearly the average quantity of flour produced from 1 qr. of wheat, giving 7lb. a week for 52 weeks; of course very good wheat will produce more, but this is as near as most calculations can be brought.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AWARD OF PRIZES AT THE LIVERPOOL MEETING—(*Continued*).

HORSES FOR AGRICULTURAL PURPOSES AT PLOUGH.

To Richard Almond, of Standish, near Wigan, Lancashire, for the best pair of Horses at Plough—20 sovs.

To Richard Podmore, of Shotton, Flintshire, North Wales, for the second best pair of Horses at Plough—10 sovs.

To the Hon. Edward M. L. Mostyn, of Mostyn, Flintshire, North Wales, for the third best pair of Horses at Plough—5 sovs.

To William Ellison, of Sizergh Castle, Westmorland, for the best single Horse at Plough—10 sovs.

To Richard Almond, of Standish, Lancashire, for the second best single Horse at Plough—5 sovs.

AGRICULTURAL IMPLEMENTS.

1. PLOUGHS.

To James Wilkie, of Uddington, near Glasgow, for the best Subsoil Plough—10 sovs.

To Messrs. Ransome, of Ipswich, for their two-wheeled Plough, marked N. L.—5 sovs.

To James Wilkie, of Uddington, near Glasgow, for his Swing Plough—5 sovs.

To the Hon. Edward M. L. Mostyn, of Mostyn, Flintshire, North Wales, for the Swing Plough exhibited by him—5 sovs.

To Edward Deane Falkner, of Fairfield, near Liverpool, for his Swing Plough, made by Ebrayton, of Carlisle—5 sovs.

To Mr. John Howard, of Bedford, for his Patent Scotch Two-wheeled Plough—5 sovs.

To Messrs. Sandars, Williams, and Taylor, of Bedford, for their Two-wheeled Plough—5 sovs.

To Messrs. Perry, Barrett, and Exall, of Reading, for their One-horse Plough—5 sovs.

To C. Hart, of Wantage, Berkshire, for the Double-furrow Plough invented by him—10 sovs.

To Thomas Glover, of Thrussington, Leicestershire, for the Turf and Stubble Paring Plough, invented by him, and exhibited by the Hon. H. W. Wilson—4 sovs.

To James Smith, of Deanston, near Perth, for his Turnwrest Plough with a Drill—3 sovs.

2. CULTIVATING IMPLEMENTS.

To the Earl of Ducie, Woodchester Park, near Stroud, Gloucestershire, for his Uley Cultivator—15 sovs.

To Messrs. Ransome, of Ipswich, for Biddell's Extirpating Harrow, made and exhibited by them—10sovs.

3. DRILLS.

To Richard Hornsby, of Spittlegate, near Grantham, for their Drill for general purposes—25 sovs.

To Richard Hornsby, of Spittlegate, near Grantham, for their Turnip and Manure Drill—10 sovs.

To Messrs. Garratt and Son, of Leiston Works, Saxmundham, for their Drill for general purposes—10 sovs.

To Mr. James Smyth, of Peasenhall, near Yoxford, Suffolk, for his Drill for general purposes—10 sovs.

To Messrs. Drummond and Sons, of Stirling, for their Manure and Turnip Hand-Drill—3 sovs.

To Messrs. Garrett and Son, of Leiston Works, Saxmundham, for their Improved Horse Hoe—5 sovs.

To Mr. John Hamilton, of Torthorwald, near Dumfries, for his Improved Horse Hoe—2 sovs.

To the Earl of Ducie, of Woodchester Park, near Stroud, Gloucestershire, for his Parallel Expanding Horse Hoe—3 sovs.

5. CHAFF-CUTTER.

To the Earl of Ducie, of Woodchester Park, near Stroud, Gloucestershire, for his Uley Chaff-cutter—10 sovs.

6. CORN AND CAKE CRUSHERS.

To J. Cartmel, of Liverpool, for his Corn Crusher—3 sovs.

To Messrs. Garrett and Son, of Leiston Works, Saxmundham, for their Cake Breaker—2 sovs.

7. CORN AND SEED CLEANER.

To Joshua Cooch, of Harlestone, near Northampton, for his Cleaning Machine, invented by the late John Cooch—10 sovs.

8. GORSE CRUSHER.

To Messrs. White and Leith, of Worksop, Nottinghamshire, for the best Gorse Crusher, invented by Joseph White—20 sovs.

9. ROOTS, SEEDS, &c.

To Messrs. Thomas Gibbs and Co., Half-moon Street, London, for their exhibition of Roots and Seeds—5 sovs.

10. MISCELLANEOUS.

To Joseph Cooke Grant, of Stamford, Lincolnshire, for his Lever Horse Drag Rake—5 sovs.

To William Blurton, of Field Hall, Uttoxeter, Staffordshire, for his Cheese Drying Turn Frame—3 sovs.

To Robert Parkinson, of Knowsley, near Prescot, Lancashire, for his Pendulum Churn—2 sovs.

To Michael Lea, of Liverpool, for his Double-acting Vertical Churn—2 sovs.

To Thomas Huckvale, of Over-Norton, near Chipping-Norton, Oxfordshire, for his implement for hoeing and thinning Turnips—3 sovs.

To Thomas Wedlake, of Hornchurch, near Romford, Essex, for his Dibbling Machine—10 sovs.

To Messrs. Cottam and Hallen, of Winsley-street, Oxford-street, London, for their Portable Weighing Machine for Pigs and Sheep—3 sovs.

To Messrs. Cottam and Hallen, of London, for their Machine for cutting and breaking "Graves" Manure—3 sovs.

To George Townshend, of Sapcote Fields, near Hinckley, Leicestershire, for his Turnip-cutting Cart, for expeditiously and effectively cutting Turnips, and spreading them when cut over the turf for cattle, &c.—5 sovs.

To Joseph Brewster, of Brewood, near Wolverhampton, Staffordshire, for his Turnip-cutter for Beasts—2 sovs.

To Messrs. Summers and Sworder, of Bishop's Stortford, Hertfordshire, for their Barley Hummeller and Blower connected—3 sovs.

To Thomas Wedlake, of Hornchurch, near Romford, Essex, for his Improved Hay-making Machine, invented by himself—2 sovs.

To James Smith, of Deanston, near Perth, for his Chain Brush, or Web Harrow—2 sovs.

SPECIAL COMMENDATIONS.

The Rev. W. L. Rham's Winkfield Dibbling Machine.

The Earl of Ducie's Hand Thrashing Machine.

Messrs. Ransome's Double Lever Thrashing Machine

Messrs. Ransome's Portable Disc Steam Engine, for Agricultural purposes.

ROYAL AGRICULTURAL SOCIETY.—We regret that in the prizes awarded at Liverpool, in Class 1, for Short-horned Bulls calved since 1st January, 1839, the award is mistated as given to Mr. John Dawson, of Cronant, Flintshire, instead of Mr. Thomas Forrest, Stretton, Cheshire; and in extra stock, an in-calf Cow, of 4 years and eight months old, is omitted, belonging to Mr. John Forrest, Stretton, Cheshire, to which a prize of 5 sovereigns was awarded.

LECTURE ON THE EPIDEMIC AMONG CATTLE.

As this disease still prevails in this country, the following lecture, extracted from the *Drogheda Journal*, will be found to possess some interest.

During the cattle show at the Royal Dublin Society, Professor Ferguson delivered a lecture on the above subject, in the theatre of that institution. His observations on which have not alone calculated to raise the veterinary profession in a scientific point of view, but also to interest the public mind in its behalf as a pursuit, the proper cultivation of which would materially advance the agricultural interest of the country in general.

Mr. Ferguson commenced nearly as follows—It is my intention to devote the present lecture chiefly to the consideration of the epizootic which has for some months been raging among the horned cattle of this and the neighbouring British islands. My reasons for selecting such a subject are twofold—first, the opinions which I entertain on the matter differ most materially from those held by the heads of the profession in England; secondly, by demonstrating the great utility of scientific investigation in the elucidation of the diseases incidental to domestic animals, I hope to excite the attention of that portion of the community interested in the welfare of farming stock, in behalf of a hitherto neglected branch of the healing art, the cultivation of which would not alone be the means of diminishing much of the sufferings endured by those animals which man has appropriated to his use by domestication, but would also tend materially to advance the agricultural interests of the country in general. When we take into consideration the immense intrinsic value of the different herds of life stock disseminated throughout the United Kingdom—the last computation of their actual value being upwards of one hundred and thirty millions pounds sterling—and that within the preceding year the losses sustained by cattle proprietors, from the deadly devastations of disease and empiricism, were upwards of eleven millions of pounds sterling, the great national benefit that would accrue from any means by which such losses could be considerably diminished, must at once appear most obvious to the reflective mind. Great indeed have been the improvements that have, within the last half century, been made in the breeding of oxen and sheep; yet the very measures which have been obliged to be had recourse to for the accomplishment of this improvement, have also, at the same time, been the means of rendering the systems of such animals more susceptible of being acted upon by the exciting causes of disease. Just in proportion as we deviate from the laws of nature, in the same degree are the susceptibilities of diseased action increased. In no instance is this better exemplified than in the great fatality attending disease, where it attacks our improved breeds of short-horned stock, when compared to its effects on the ordinary description of oxen. This ceases to appear extraordinary when we take into consideration the peculiarly artificial state of organisation to which they have been brought by the modern system of breeding. Although by far the best adapted from their peculiar structure to suit the purposes required from them, as being well calculated to fatten expeditiously, attaining an enormous size in those parts where it is desirable, and the females being generally also excellent milkers; yet, when regarded in the light of animals adapted to live in a state of nature, and consequently having but little predisposition to disease, they will be found but very imperfect. The extraordinary tendency to accumulate fat, combined with the soft delicacy of muscular fibre, with comparatively little bone in the formation of their skeletons, is a state of the animal system, while, however desirable to the speculative breeder and the refined epicure, is quite incompatible with the power of resisting either the exciting causes of disease, or the effects of intense inflammatory action. There is, in fact, a langour of circulation and a deficiency of nervous energy inconsistent with great vigour of constitution. Such being the case, it becomes a matter of rather an extraordinary nature, that those persons most interested in the improvement of the breeding system, when they found this description of stock so much increased in value, did not turn their attention towards seeking a means by which some of the immense losses contingent on the breeding of such cattle might be diminished. Year after year they suffer from the inroads of disease among their stock, by having no other means of checking its fatal course, excepting the chance cures of the empirical cow-leech—which are, like angels' visits, "few and far between." For a single individual to take any decisive step towards remedying such an evil, would be quite an impossibility. Such an undertaking to have any chance of success, would require the united exertions of a considerable number. It must emanate from some society having the agricultural interests of the country as its principal object; the expense of putting such a project into execution being far too great to be undertaken by any scientific body in this country, in consequence of her Majesty's government, in its misguided notions of Irish political economy, having, through the misrepresentations of those placed to watch over the interests of this portion of the United Kingdom, so reduced all parliamentary grants made for the advancement of scientific purposes, that it becomes a matter of wonder how such societies can possibly accomplish even what they do, and, at the same time, support that degree of dignity in the scientific world naturally expected from institutions founded on royal charter, and professedly supported at the expense of the nation at large, through the medium of the government. The deficiency, however, of scientific information, relative to the treatment of horned cattle when labouring under the effects of disease, is not confined to this country alone, but extends throughout the entire world. Having given a lucid dissertation on the peculiarities of epidemical and epizootic diseases, Mr. Ferguson stated that although the present epizootic was in this country comparatively new, it had travelled through Spain, Portugal, France, Switzerland, Holland, Belgium, Bohemia, Hungary, and Prussia, previous to its making its appearance in England, which it seems it did on the western coast of that island about two years ago. Every description of animal living in a state of domestication, has been affected by the peculiar state of atmosphere that has for some time past existed. Man himself has not escaped, and even poultry have been affected. All cloven-footed animals have evinced pretty nearly the same symptoms: the principal characteristics among this class of animals being an affection of the mouth, feet, and udder—the former having a number of vesicles or blisters formed in it on the tongue and gums; the feet and udder being frequently affected in the same manner, although sometimes they are frequently tumified. The treatment which the learned gentleman recommended was, that the blisters on their formation should be opened with a lancet or other sharp instrument, as tearing them with the finger only increased the inflammation. The sores left by the blisters in the mouth to be dressed twice per diem —with a solution of sulphate of zinc, one ounce to a quart of soft water; those on the feet with sulphate of copper, one ounce dissolved in a quart of water; and the sores on the udder with a solution of alum, in proportion of one ounce to a quart of water. In case of there being much tumefaction of the feet or udder, the parts ought to be fomented with a decoction of poppy heads, not too warm. Three quarters of a pound of the sulphate either of soda or of magnesia, combined with one ounce of nitrate of potass, and the same quantity of powdered ginger, made into a drench with gruel, to be given every fourteen hours until it moves the bowels; having done which, it must be discontinued. The patients ought to be put in an airy shed, with plenty of good dry litter. The following we will give in the Professor's own words, as being of the utmost importance:—We shall find some assistance in the solution of the question of infection and contagion, from studying the nature of the disease itself, to which I must now beg to draw your particular attention, as being a point that has been hitherto neglected, and one on which I can give you more novel, and at the same time, profitable information, than on any other. Close observation and extensive experience long since convinced me of the disease in question being a pustural one, its essential and almost invariable effect being the formation of those vesicles or blisters to which I have so often directed your attention during the present lecture. It is most indubitably a species of pock, possessing very specific characters, which are peculiar to itself. In the year 1836, while attached to one of the continental veterinary colleges, this disease attracted my attention, from its great prevalence and destructive effects among the herds of the neighbouring hamlets. Its character was then of a most malignant nature, much more so than in this country, where it is extremely mild. I, immediately on perceiving that it was pustular, instituted a series of experiments for the purpose of trying the different means of imparting it to healthy animals; the idea having suggested itself to my mind, that if it could be produced by inoculation, much benefit might accrue by selecting the matter from favourable cases, and inoculating healthy stock, believing that they, from the constitution being strong and unimpaired, from the diseased principle not having lurked for any length of time within their system previous to showing itself, would have the attack comparatively mild, and quickly pass through the different stages without either endangering life or losing condition. My efforts were crowned with success; I succeeded beyond my most sanguine expectations. Often-repeated experiments proved not alone that the disease could be propagated by inoculation, but that, where it was produced in this manner, its effects were extremely mild. It has since been tried by others. In the *Veterinary Journal* of this and the preceding month, there are several cases cited. Mr. Carlisle, of Wigton, in Cumberland, speaks most highly of it. Some care, however, is necessary in the selection of the vesicle to obtain good matter to inoculate with. The discharge from the sore of one that has long broken, ought to be avoided; indeed it is frequently innocuous. Select one that is well, though recently formed; scrape the skin on the dewlap or inside of the thigh or fore leg with a lancet until you make the part a little raw, but not so much so as to bleed; then open the vesicle selected on the diseased animal, catch the fluid contained in it with a small bit of sponge or cotton, then apply it to the abraded surface of the animal you wish to inoculate. In a short time the disease developes itself; and from being more the effect of local impression than the result of constitutional derangement, it almost immediately yields to prompt treatment. It is exceedingly rare for animals to be attacked a second time. Sheep and swine may be treated in the same manner. It is advisable to inoculate breeding ewes some time before the lambing commences, as the disease, when it attacks them at that period, proves but too often fatal to their progeny. I have frequently produced the disease in oxen by inoculation from sheep and swine, and *vice versa*. The human subject sometimes contracts this disease by inoculation. The disease in man is ushered in, three or four days after the inoculation, generally with pain in the head, sensation of pressure on the eye-balls, weakness, nausea, alternate hot and cold fits: pustules form themselves irregularly over the surface of the body, and about the mouth and nose: sometimes, though unfrequently, blisters are found on the tongue. A little purgative medicine, and a poultice to the wound if any inflammation be present about it, prove sufficient to restore the patient to health in from two to five days. I have now, gentlemen, given you an imperfect, although I hope, in some measure, an useful sketch of this disease. I regret exceedingly that others better calculated for the task, from having more leisure to study it, did not undertake it. The means, however, of this description of study exist not in this country, excepting for those whose minds have been peculiarly fitted for the task by a description of education, for which the student is obliged to seek elsewhere. Deeply is it to be lamented that the innate talent of almost all Irishmen should be so o'ershadowed by the lowering clouds of eternal religious and political dissension, excluding the light of native genius from different branches of art and of science calculated to raise the intrinsic value of our country, by placing it on a basis having its agricultural interests as one of the most important key-stones of its very foundation; and second to none, in an agricultural point of view, is that portion of farming which relates to the herds of live stock by which we are not alone supplied with nutriment at home, but also have a ready and profitable means of disposing of a great portion of the vegetable products of our soil, by the breeding and export of cattle to the English, Scotch, and other markets. It is an extraordinary fact, that while no one for a moment doubted the importance of live stock in an agricultural point of view, yet so little did they reflect on the contingencies of breeding and grazing and feeding, that the idea never suggested itself to their minds of taking into consideration the best means of averting or even diminishing the evil—a considerable portion of which rests in the immense losses annually sustained by the deadly devastations of disease—losses, I should say, that could be lessened at least fifty per cent.; for, without exaggeration, it is my firm belief that more than one-half of those that die, are lost from a want of proper medical treatment, or fall victims to the empirical mismanagement of the ignorant cow-leech. Extraordinary as such a state of things may at first appear, yet it is an incontrovertible fact, although a most lamentable picture of the effects of national negligence. It would appear that what was the interest of all occupied not the attention of any, or, in the phraseology of the vulgar, "*every body's business is nobody's business.*" With a view of interesting all of you, gentlemen, who have this day honoured me with your presence, and disseminating a small portion of what little information I have acquired by my labours, I undertook the present lecture. Hoping that my observations may be attended with some practical utility to the agricultural interests of the country, I thank you for the attention with which you have heard me.

The approbation evinced at the conclusion of the lecture was most marked.

THE PLOUGH.

The following is an extract of a letter on the plough, addressed to the President of the Royal Agricultural Society, at Liverpool, dated 17th July, 1841 :—

"The great importance of this implement, the restless study to improve it, and above all the zeal at this moment manifested by the highest intellectual classes, interesting themselves as they do in agriculture, induces an appeal through these higher channels to the practical farmer, in order to procure the benefit of a very trifling, but radical alteration in the plough.

"The swillyard, which is a lever, where the weight lies between the *fixed point* and the *power*, is intended by its bearing upon the beam, to keep the plough *upright*. It is as it were the rudder, without which the implement through the fallow, like the ship through the waves, would be utterly unmanageable. It is the swillyard that prevents the plough from going upon the lay hand (as it is called), which, when it is so held, the share, instead of being kept flat and moving horizontally, is lifted up on the off side, and raises an angular instead of a cubical piece of the fallow, and thus leaves much of the land, with the weeds untouched at the bottom of the thorough.

"And this is the general complaint both with the Essex foot plough, the Suffolk wheel plough, and most others, which are so often held in the same careless manner upon the lay hand.

"The *weigh-pin* of the Essex plough, is an iron bolt upon which the *plough staff ought* to WEIGH or press, in order to assist in keeping the plough upright. And a *second swillyard*, acting as a *second* lever, with the sling whippletree, or weightree, attached to it, with another foot chain and crong, would still further assist in keeping the beam horizontal, and the plough upright; and thus the off horse, with the off swillyard, would render it impossible for the ploughman, by neglecting to bear upon the plough staff, to let the plough turn upon the lay hand, which constructed as the implements is, the draught from the single swillyard necessarily with the least inattention occasions it to do.

"The two swillyards moving upon one pivot, to be set nearer together or further apart, as found convenient, and altered as the work may require. The fallow, we know, is very badly made when the plough with one swillyard, (for it could not happen with two,) is suffered to go upon the lay hand. And since the careless manner of holding it lightens the labour, making it much easier for the horses as well as the man, would it not be advisable, by almost any alteration in the plough, to try to guard against the mischief? and the more so, since the making a good fallow is acknowledged to be of all the labors in the field, by far the most essential. "Your's, &c.,

"*Broomfield, July* 31, 1841. W. LUCAS."

REPLY TO A CHESHIRE FARMER,

ON THE DECISION OF THE JUDGES AT THE LIVERPOOL MEETING OF THE ROYAL AGRICULTURAL SOCIETY.

MR. EDITOR,—I have seen the Cheshire Farmer's remarks respecting the Wyersdale cow which obtained the premium of fifteen sovereigns in Class IV. at Liverpool, and also the cow which obtained the second prize of ten sovereigns. He says they gave no milk (in that he is certainly wrong, though they did not give much) ; but how could he reconcile his mind to showing the white cow which he calls a Yorkshire cross in that class? For my part, I have been a breeder of short-horns all my life, and I am now no chicken ; and I declare I could see nothing in her to show a cross, or to qualify her for Class IV. She certainly had the appearance of a milker, but the judges must go by the rules, and give the premium to such as are duly qualified for the class in which they are entered. I do not yet know who the judges were, but in every class I think the judges had acted most conscientiously in the discharge of their arduous duties. In everything exhibited in the show-yard all the error is—cattle, and particularly, male animals, were overfed, and many not fit for work. If this overkeeping could be remedied, it would be well. Lord Talbot's rams were certainly very prime little animals, but in our northern clime I would not prefer them. We like a hardy race. More wool and more mutton on the same carcase is better adapted to the consumption of the population in the northern manufacturing districts; still a cross between these rams and coarser ewes would be most beneficial to many breeders. The Royal Agricultural Society has very wisely remedied that evil, by giving premiums to long-woolled sheep ; and admirable specimens were exhibited, of which Messrs. Large and Smith may very justly be proud. The south-downs exhibited were also very prime ; and the combination of a good thick fine fleece with perfect symmetry in Mr. Webb's shearling ram, must have excited in every mind a degree of pleasure in beholding him.

I will turn back to what the Cheshire Farmer calls a little Wyersdale cow. Now, Sir, is that cow not far above the average weight, when fed, of the average of cattle fed on the average lands of this kingdom ; and is she not perfect in symmetry and aptitude to fatten? She had her last calf the beginning of last October. Surely a Cheshire Farmer is not to dictate. As to what propensities cattle are to possess, localities differ; and though good milkers are certainly desirable, yet premiums must not be given to suit any one particular district : the general good, the general usefulness, is what is most desirable, and must and will be attended to. The judges have an onerous and arduous duty to perform; and if they act strictly to the printed rules and instructions given them, no one ought to complain. The Herefords are said to be bad milkers, yet they have an amazing propensity to fatten; and although I profess to be a short-horn breeder, yet I would pause and ponder a long time, if I possessed such animals as some of the Herefords exhibited were, before I made a change ; and most particularly a yearling Hereford bull, shown by Mr. Walker at Liverpool, whose perfections as to shape and propensity to fatten could not but please the most prejudiced in favour of any breed. The great, the grand desideratum is to raise a stock best suited and best adapted to the country in which you are situated. I see the first object of the Cheshire Farmer when he entered the show-yard was to pay the *pigs a visit;* I therefore must conclude by wishing him a remunerating price both for his whey-fed porkers and his Cheshire cheese, and beg to subscribe myself,

A Westmoreland Farmer.

P.S. I am glad to see that a committee is appointed to raise a subscription for a piece of plate for Mr. Shaw, and I regret I was not able to attend that meeting when in Liverpool. It has my hearty concurrence.

[Our correspondent has given us his name and address.—Ed. F.M.]

NEW PATENTS.

William Newton, of Chancery-lane, civil engineer, for *improved machinery for clearing wheat and other grain or seeds from smut or other injurious matters* (being a communication), July 11.—The machine consists of an outer cylinder standing in a vertical position upon suitable legs; the lower part of it is contracted, assuming the form of a funnel for a depth of about three inches, and then terminating in an open bottom, through which the cleaned grain falls to the floor, and a strong current of wind passes up into the cylinder. The interior of the cylinder is cut into ridges, which run up vertically from its lower end to within about eight inches of its upper end, and then take an oblique direction, their terminations being at an angle of 12° with a vertical line. On the upper end of the cylinder is a flanch, between which and a cap-plate the smut, chaff, &c., are blown out.

Within this outer cylinder is another, from the periphery of which sixteen, or any other suitable number of beaters extend out radially; their lower ends rise up vertically, parallel to the shaft of the inner cylinder, but their upper ends, when within about eight inches of the top of the cylinder, take an oblique direction, their terminations being at an angle of from 12° to 28° with a vertical line. A portion of the upper end of each beater is elongated, so as to form vanes or wings, which occupy and revolve within the space between the flanch and the cap-plate. The beaters consist of thin plates of metal about 1¾ inch in width, and when the inner cylinder is inserted into the outer one, the edges of the beaters should stand about the distance of half an inch from the internal surface of the outer cylinder. Under the lower end of the inner cylinder are four vanes, which aid in producing the upward draft. The upper end of the shaft of the inner cylinder is supported by, and turns upon, a hollow cylindrical steel bolt or gudgeon, the upper end of which is held firmly in a bridge-piece that rises from the cap-plate. The bolt being hollow, allows oil to be poured through it into a receptacle in the top of the shaft.

The following is the mode of operation:—The grain to be cleaned is put into a hopper, and is fed into the space between the cylinders through a tube, which is inserted into the side of the outer cylinder near its upper end; a rapid rotary motion is now given to the inner cylinder, and the grain descending towards the lower parts of the cylinders is forciby beaten by the beaters, thereby beating off the smut-balls, white-caps, and other deleterious substances of a texture softer than the grain. By the rapid motion of the inner cylinder, the vanes expel the air from the upper part of the machine, and consequently producing a partial vacuum within the outer cylinder, create a strong draft upwards through it, which carries off through the space between the flanch and top plate all the light matters that have been separated from the grain, whilst the grain, by reason of its superior weight, gradually descends through the opening in the bottom of the outer cylinder on to the floor.

Claim first.—The mode of producing a strong upward current of air, by the contraction of the lower end of the outer or fixed cylinder, and the wings or vanes at the upper end of the revolving cylinder.

Claim second.—In combination with the foregoing, the peculiar form and direction of the ridges made within the outer cylinder, and surrounding the inner cylinder with peculiar beaters, capable of throwing the grain against the ridges; such beaters consisting of flat radial strips of metal, which extend vertically along the lower portion of the cylinder, but are inclined towards the upper ends.

Claim third.—The adaptation of the stationary bolt or hollow gudgeon, as connected with the receptacle for containing oil in the manner described.

Thomas Vaux, of Frederick-street, Gray's-inn-road, land surveyor, for *improvements in horse-shoes*, July 19.—This invention consists in a mode of constructing horse-shoes with movable caukings, in order that the shoes may be "roughed" or unroughed without taking them off.

Claim first.—The mode of constructing shoes of malleable cast iron, with dovetail grooves and movable projections, as described.

Claim second.—The mode of making shoes of wrought iron, with dovetail grooves and movable projections, as described.

In front of the shoe a dovetail groove is formed, receiving a cauk or projection, which is secured in the groove by a screw; at the hinder parts of the shoes two other dovetail grooves are formed, in which two cauks are received, and are held by pins or screws, which are driven into holes formed at the back of the shoe, and bent over at the points; that part of the hole which passes through the dovetail groove being cut partly out of the shoe, and partly out of the cauk.

One of the variations in the mode of affixing the cauk in front of the shoe consists in fixing it by means of a wedge, driven in at the back of it into grooves formed in the shoe, and a pin is driven through the wedge, and through the dovetail plate on which the cauk is formed, and is clenched in front of the shoe.

A shoe is likewise shown having two projections in front fastened by screws in a similar manner to the one first described.

The shoes and projections are formed by casting them in malleable cast iron, and afterwards annealing them for from seven to ten days, according to the substance of the metal operated upon. The holes for the screws and pins are drilled, or produced in casting, and those for the screws are afterwards tapped to suit the screws to be received.

The shoes may likewise be made of wrought iron, but malleable cast iron is preferred.

William Hutchinson, of Sutton-on-Trent, Nottinghamshire, seed-crusher, for certain improvements in the manufacture of oil and seed cake, Aug. 4.

The barley, or other grain or pulse, is first passed through a riddle, in order to free it from any gravel or other rubbish that may be mixed with it; then twelve quarters of it are ground into meal, and to this meal nine quarters of linseed, previously crushed by passing between rollers, are added. These ingredients being well mixed together, are ground under vertical stones into a fine flour, which is then placed in a kettle, and heated to about 212 degrees by means of steam. While in this hot state it is removed from the kettle into an ordinary stamper press, and subjected to great pressure, by which all the superfluous oil from the linseed that is not taken up by the barley is expressed.

Claim.—The manufacture of oil cakes by the admixture with linseed of barley, wheat, oats, peas, beans, tares, or other grain or pulse, in the proportions, or about the proportions, and in the manner described.

ON LUCERNE.

The cultivation of this plant is extending since its valuable qualities have become better known, and the foddering of horses and cattle in enclosed yards has been adopted. It succeeds well upon any description of land of deep staple, provided the subsoil is dry; but this is not always an exception, as upon some of the strong clay soils of good quality it succeeds as well as upon most others, which is not in accordance with its general habits, as no drainage except that effected on the surface can be given; and as far as my experience extends, I have found all descriptions of soil that will produce mangel wurzel and Swede turnips in perfection, will likewise produce this excellent plant in perfection. I have also found it invariably succeed well after a crop of mangel wurzel, and it is rarely if ever injured by the fly upon such rotation, from the facility with which I obtain a plant under my present system, which is by sowing every year and ploughing up a portion that is wearing out, or has become overrun with grass. My process is simply as follows:—The land is first summer-tilled, with or without turnips, for barley or oats, and all root-weeds are thereby destroyed. After the barley or oat crop is harvested, the land is immediately ploughed, and if the weather permits, one or two more ploughings are given before the winter; the land is then put upon ridges for the mangel wurzel, and during the winter or in the spring months from sixteen to twenty loads of good compost manure is added, and the land afterwards planted with mangel wurzel; after that crop is gathered in November, the land is again carefully ploughed, and in the following spring, if perfectly dry and friable, another ploughing is given, or it is scarified so as to produce a fine tilth upon the surface; and about the middle of April the seed is drilled in, at the rate of about 16lbs. per acre, in rows ten inches distant from each other, or it may be sown broadcast with 20lbs., and lightly harrowed. The sowing may take place at any time after the middle of April until the middle of June, but should not be sown earlier; the late frosts being equally injurious as the fly, which frequently destroys it altogether. Upon the young plants appearing and becoming well established, the land should be kept free from weeds by hand-weeding and repeated hoeings; at Midsummer or soon after, it should be mown, and again mown early in September. In this process the scythe should have a keen edge, and upon no account should it be cut with any but a sharp instrument, as, if bruised by that operation, the next shoots will be weakened and dwindling. In the autumn, after the cuttings have been completed, sheep should be closely folded upon it; and if fed upon the spot with turnips, cake, or corn, so much the better. The manuring on this plan is better adapted to ensure a full crop than by any other mode; and whilst it prevents the grass increasing, it tends to increase the produce in the greatest possible degree; but if sheep cannot be available, a dressing of well-mixed compost, consisting of stable dung and fresh maiden earth, should be applied. In the following spring little requires to be done, further than picking off the loose stones, pieces of wood, &c., that may have accumulated so as to retard the scythe during the process of mowing. If any weeds appear, they should be carefully removed in March, but the hoe should be used sparingly, for at this season the slightest exposure of the roots to frost will injure it greatly. The first mowing will be ready to commence in the latter part of April or the beginning of May, and from its growing rapidly at this season may be cut early, as the succession will be better maintained; three or four cuts may be taken altogether during the summer. In the autumn of every year the folding with sheep must be repeated, or a dressing given by the compost will be quite sufficient; and if thus early repeated, the lucerne may be kept in vigorous growth from eight to ten years; but as it is far more nutritious in the first five or six years, if other land is available, and a succession of pieces is once established, it ought never to remain longer from one sowing. To those, however, who may wish to convert the land to permanent pasture, perhaps no better mode can be adopted than by letting the lucerne continue until the natural grasses supersede it. It is not necessary literally to follow the plan I have laid down; I only state it as my practice, and by that I succeed. The essential points are—First, that the land should be thoroughly cleaned, but the lucerne does not succeed well immediately after the fallow until a crop of turnips, mangel, or some other crop, has been taken, that has also been kept free from weeds. Secondly, it should not be sown too early, and the seed should be new. Thirdly, clean thoroughly the first summer, and regularly fold upon it with sheep afterwards, discontinuing the hoe altogether. As the produce must vary according to the nature and quality of the soil, no statement can be furnished of the quantity other than by stating the weight of that which has already been produced; three cuttings from good land will yield from five to six cwt. per square rod. Upon two acres I have kept six horses and colts from the middle of April to this time, besides a portion used for weaned calves. Upon another farm, six acres have supported ten cart and two nag-horses during the same period. And a friend of mine, who has a very strong clay land farm of nearly 400 acres, has kept sixteen powerful horses upon eight acres, from April to October, for several years past, with the exception of three weeks between the first and second cuttings, when fed upon tares. I find that my horses maintain themselves in condition without corn, and perform their work better than others that are fed upon cut clover, tares, &c., and one bushel of oats each per week. A fine piece of lucerne I calculate to be worth from 20*l.* to 25*l.* per acre; if cut for hay it should be thoroughly made, as heating upon the stack spoils it, and makes it mouldy. I shall be ready at any time to give further information, and to parties requiring it, a reference whereby they may be able to inspect several pieces now in growth, and thus have an opportunity of obtaining from the growers their various modes of cultivation; for although I have some good pieces, my land is not so well adapted as that of others to whom I can refer, and who will be glad to have an opportunity of showing it.

I remain, Sir, your obedient servant,

Writtle, Essex. Robt. Baker.

Farmers and country gentlemen will see by our advertising columns that Mr. Cuthbert W. Johnson has ready for publication a work of great practical utility. From Mr. Cuthbert Johnson's well-known reputation as a writer on agricultural subjects, there is no doubt that his work will find its way into the hands of all who take an interest in the economy of farming, the application of the most modern discoveries of science to practical agriculture, the construction of the most improved agricultural implements, and, indeed, in rural affairs in general. We wish Mr. Cuthbert Johnson every success in his important undertaking.—*Chelmsford Chronicle.*

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Monthly Council, held on Wednesday, the 4th of August, present, Henry Handley, Esq., President, in the Chair; Hon. Captain Spencer, Colonel Thomas Austen, Richard Westbrook Baker, Esq., David Barclay, Esq., M.P., Thomas Raymond Barker, Esq., French Burke, Esq., Colonel Challoner, William Fisher Hobbs, Esq., George Kimberley, Esq., John Kinder, Esq., W. Woods Page, Esq., Rev. W. L. Rham, and William Youatt, Esq.

Liverpool Meeting.

The President stated, that agreeably with the unanimous resolutions of the Council at its first assembling in Liverpool, after the termination of the business of the meeting, he had addressed letters of thanks, in the name of the Council, and on behalf of the Society, to the following gentlemen and public bodies in that town:—

To the Mayor of Liverpool, for the great interest he had evinced in the proceedings of the Society, the facilities he had afforded in his municipal capacity, the grant he had made on his own part and that of the corporation, of the "old infirmary yard" as the site of the dining pavilion, and the hospitality he had shown to the Council in particular.

To Sir Joshua Walmsley and the Police Committee, for the excellent arrangements they had made, and the efficient measures they had adopted for ensuring the maintenance of good order and the preservation of the peace during the week of the Liverpool Meeting.

To Richard Earle, Esq., of Knowsley, for the valuable aid he had so kindly afforded the Society in acting as its representative during the progress of the preparations for the meeting.

To the Mechanics' Institution, for the great obligations the Society owed to the Committee of Management, the prompt, liberal, and unconditional grant of the use of their rooms for the sittings of the Council, and the purposes of the Finance Committee during the week.

To Messrs. Falkner and Lace, for their liberal grant of the use of "Falkner's Fields," as the site of the show-yard for cattle and implements, and their general interest in promoting the objects of the Meeting.

To Messrs. Lucas, for their liberal grant of the use of their Repository for the purpose of the Council dinner.

To the Proprietors of the Race-Ground, for their liberal grant of the use of the Race-ground for the trial of agricultural implements.

To the Earl of Derby, K.G., for the essential service his lordship had rendered to the Society in liberally supplying the requisite amount of horses for the trial of agricultural implements on the race-ground.

To the Harrington and Liverpool Water Company, for the effective measures they had so promptly undertaken for the due and gratuitous supply of water to the cattle-yard.

To the Liverpool Library, for the handsome and liberal manner in which the Committee not only gave access to the Members of the Royal Agricultural Society of England to their Library, and the full advantages of their Institution, but the especial privilege of taking out of the library such works as they might wish to consult and peruse at leisure during their stay in Liverpool.

To the Liverpool Athenæum, for the handsome and liberal manner in which free admission was given during the Meeting to the non-resident Members of the Society.

To the Royal Institution of Liverpool, for the handsome and liberal manner in which free admission to their library was given to the Members of the Society.

To the Union News Room, for the handsome and liberal manner in which the rooms of the Institution would be open to Members of the Society during the period of the Meeting.

Vote of thanks to the President.

The Council unanimously confirmed the following vote of thanks to Philip Pusey, Esq., M.P., the late President of the Society, moved at the former Council by Thomas Raymond Barker, Esq., and seconded by Earl Spencer.

"That the thanks of the Council be voted to Mr. Pusey, for his valuable services and unremitting attention to the interests of the Society, during the period of his Presidency."

Finance Committee.

Colonel Challoner, Chairman of the Finance Committee, laid before the Council the report of the meeting, and the result of the examination of the accounts, held that day; informing the Council that the Committee before leaving Liverpool had, agreeably with the orders of the Council, left with Messrs. Holme, the sum of 1500*l.* on account of the building of the pavilion and the erections of the cattle-yard; with Mr. Radley, of the Adelphi, the sum of 1000*l.* on account of the supply of the Council and Pavilion dinners; and with Mr. Ledger, one of the stewards of the yard, the sum of 500*l.* on account of the disbursement of expences connected with the show-yard, leaving the residuary balance on each of these three accounts to be finally adjusted at a future meeting of the Committee. Colonel Challoner further reported that the Committee recommended that cheques should be drawn for the amount of prizes respectively due to the successful competitors at the Liverpool Meeting, in the department of cattle, implements, extra stock, &c., or prize essays; and that the mileage of the judges who had kindly lent their valuable aid on the occasion, should be paid as their accounts were sent in and received. The Committee also recommending that Post-office orders payable to the Secretary, should be suggested as the most direct and satisfactory medium for the payment of subscriptions due from Members to the Society.

Bristol Meeting.

The Council directed a proof of the Bristol Prize Sheet to be laid before them by Wednesday next, and a printed copy, when finally approved, transmitted by post to each member of the Society.

The President was requested by the Council, to announce to the authorities of Bristol, the intention of the Society to hold their next annual country meeting in that city, and request their co-operation in carrying out the objects of the Society; and the following gentlemen were named members of the General Bristol Committee:—

The President
Duke of Richmond
Earl Spencer
W. Miles, Esq., M.P.
Hon. Captain Spencer
T. Raymond Barker, Esq.
Colonel Challoner
William Shaw, Esq.
Humphrey Gibbs, Esq.
James Dean, Esq.
W. Goodenough Hayter, Esq., M.P.
J. W. Childers, Esq., M.P.
Colonel Austen

It was also decided that a deputation, selected from the foregoing committee, should proceed to Bristol for the purpose of ascertaining the most eligible sites for the Pavilion and Council Dinner, as well as for the Cattle and Implement-Yard, and to make such arrangements in reference to other points of the business as may seem desirable.

Easl Spencer, Colonel Challoner, Hon. Captain Spencer, Mr. Shaw, Mr. Jonas, Mr. Kimberley, the Rev. James Linton, and Mr. Hobbs, communicated to the Council various suggestions in reference to the next annual county meeting, which were discussed and referred to the Bristol Committee.

Committees.

The Journal, Finance, and Geological Committees were revived for the ensuing session, and the Veterinary Committee restored for the express object of completing their labours in reference to the Epidemic Reports.

David Barclay, Esq., M.P., gave notice that at a future monthly Council he should propose an alteration in the Bye-law regulating the date at which committees at present expire with the annual County Meeting, and should move that all committees should expire with the General Meeting in December.

The name of Colonel Austen was added to the Finance

Committee, and that of Mr. Kimberley to the Journal Committee.

Viscount Duncannon, First Commissioner of H.M. Woods and Forests, communicated to the Council two Reports, made to the Government by Professor Phillips, F.R.S., Chemical Director of the Museum of Economic Geology, on the alleged powers of sulphate of copper to protect sail-cloth from the injuries of time and weather; and on the question of the application of nitrate of soda as a manure.

Cultivation of Agricultural Plants.

J. D. C. Sowerby, Esq., Secretary to the Royal Botanic Society of London, informed the Council that the Botanic Society "had prepared a plot of ground for the reception of plants useful in agriculture, which have been, or hereafter may be, introduced into England, and for experiments upon such plants as are likely to become useful to the agriculturist." Mr. Sowerby further stated, "that the Botanic Society would gladly receive any seeds, roots, or plants, and any suggestions for their management, that the Royal Agricultural Society of England, or any of its members, might feel disposed to favour the Society with."

Foreign Agricultural Meetings.

Various documents, connected with the great meeting of the German agriculturists at Doberan, in the first week of September, and of the Italian Cultivators of Natural Science at Florence, in the second week of the same month, in the present year, were communicated.

Guano Manure.

Sir Humphrey Davy having in the year 1813, called the attention of the agricultural world to the peculiar properties of the sea-fowls' excrements as manure, and Professor Sprengel having referred to it in his article on "Animal Manures," translated and printed in the 4th part of the Society's Journal, the importation of two cargoes of the guano manure, announced by Mr. Castellain as being on their way to the port of Liverpool, and the result of Mr. Skirving's trials, exhibited at the Liverpool Meeting, having excited the general attention of the Members of the society, Mr. Macdonald, of St. Mildred's Court, London, and Mr. W. Eardley Wright, the Naturalist of the Falkland Islands, have each made communications on this subject.

Sir Humphrey Davy, in his Agricultural Chemistry, has made the following remarks on this subject:—

"Amongst excrementitious solid substances used as manures, one of the most powerful is the *dung* of *birds* that feed on *animal food*, particularly the dung of sea-birds. The guano, which is used to a great extent in South America, and which is the manure that fertilizes the sterile plains of Peru, is a production of this kind. It exists abundantly, as we are informed by M. de Humboldt, on the small islands in the South Sea, at Chinche, Ilo, Iza, and Arica. 50 vessels are laden with it annually at Chinche, each of which carries from 1500 to 2000 cubic feet. It is used as a manure only in very small quantities; and particularly for crops of maize. I made some experiments on specimens of guano sent from South America to the board of Agriculture in 1805. It appeared as a fine brown powder; it blackened by heat, and gave off strong ammoniacal fumes; treated with nitric acid it afforded uric acid. In 1806, M. M. Fourcroy and Vauquelin published an elaborate analysis of guano. They state that it contains a fourth part of its weight of uric acid, partly saturated with ammonia, and partly with potassa; some phosphoric acid combined with the same bases, and likewise with lime. Small quantities of sulphate and muriate of potassa, a little fatty matter, and some quartzose sand. It is easy to explain its fertilizing properties: from its composition it might be supposed to be a very powerful manure. It requires water for the solution of its soluble matter to enable it to produce its full beneficial effect on crops. The dung of sea-birds has, I believe, never been used as a manure in this country; but it is probable, that even the soil of the small islands on our coast much frequented by them, would fertilize. Some dung of sea-birds brought from a rock on the coast of Merionethshire, produced a powerful but transient effect on grass. It was tried, at my request, by Sir Robert Vaughan, at Nannau. The rains in our climate must tend very much to injure this species of manure, where it is exposed to them, soon after its deposition; but it may probably be found to great perfection in caverns or clefts in rocks, haunted by cormorants and gulls. I examined some recent cormorant's dung which I found on a rock near cape Lizard, in Cornwall. It had not at all the appearance of the guano; was of a grayish white colour; had a very fetid smell, like that of putrid animal matter. When acted on by quicklime, it gave abundance of ammonia; treated with nitric acid it yielded uric acid."

Mr. Macdonald's communication stated that the guano had been tried upon 60 different farms, and on every different crop, and had not only not failed in any one instance, but in every case had been the cause of an astonishing produce. That Mr. Smith, of Gunton Park, in Norfolk, had applied 4 bushels (weighing about 200lbs.) to a statute acre, and on the equal and adjoining part of the same field had applied 15 bushels of Bone-dust; both having been drilled into the ground with the seed-wheat:—the guano gave 6 quarters 2 bushels 1½ peck, and the bone-dust, 4½ quarters, of wheat. That the guano in appearance was a dry powder, weighing 52lbs. to the bushel; and that for use 4 bushels of guano, mixed with 1 bushel of wood-charcoal in powder, formed the proper quantity to be applied to the acre; the charcoal having the peculiar property of porous bodies of holding the gaseous ammonia within its interstices, and thus rendering the manure less fugitive, it having been found that such mixture with charcoal rendered the second year's crop almost as abundant as the first. Mr. Macdonald recommends the guano to be either drilled in with the seed, or sown broad-cast with a light ploughing or harrowing in; and that not only for wheat, but in the case of clover, turnips, barley, oats, and especially hops, its effects were still more evident and favourable.

Mr. Macdonald concludes his communication by giving the following chemical analysis of 100 parts of the guano:—

Bone-earth or phosphate of Lime	30½ parts.
Sulphates and Muriates	3
Ly-thic Acid	15
Ammonia	15
Other organic matter...............	36½

Mr. Eardley Wright, the Naturalist, sent out by the Earl of Derby, to prosecute his researches in the Falkland Islands, (and to which station he intends immediately to return) informed the Society of the immense quantities of Penguin's excrements collected in various localities in those islands so favourably situated for supplying the article as an object of commercial import, in our homeward-bound vessels. Mr. Whitington, director of the Falkland Islands Association also announced to the Society his having received a most interesting collection of specimens of varieties of grasses, &c. from these islands. The Rev. Mr. Rham informed the Council that the guano was only three-fourths heavier than water, and required a peculiar geographical locality for its remaining uninjured in the large deposits in which it had been founed, and a climate in which neither rain nor strong dews fell on the ground, the manure being composed of animal matter aud salts, and consequently so liable to decomposition unless remaining in a perfectly dry state.

Sulphate of Ammonia.

Both Sprengel and Liebig having referred to the importance of preventing ammonia from flying off from manure in the form of gas, by saturating and fixing it by means of some acid, which would again yield it to the decomposing powers of plants; Dr. Daubeney, in his third lecture (page 88), delivered before the University of Oxford, suggested the conversion of gypsum, or sulphate of lime, into a sulphate of ammonia, by means of the ammoniacal liquor of gas-works; and Messrs. Gill and Smith, of Kettering, acting on this suggestion, have undertaken to prepare for sale at 5s. per cwt. the sulphate of ammonia from this source, and of which they presented a sample to the Society.

Derbyshire Marl.

Mr. Kimberley submitted to the inspection of the Council a specimen of the red marl used with very good effect on the thin gravels and weak soils in South Derbyshire, and in Staffordshire, near Burton-on-Trent.

Mr. Danson, of Liverpool, communicated to the Society a paper by Mr. Rowlandson, of Ballymartin, in Ireland, on the cheap production of chlorides of calcium and ammonia as saline manures; Mr. Robert Collins, of Dublin, a paper on the gestation of cows; Mr. Wills, of Camberwell, a circular of queries relative to the employment of the poor; Mr. Bullen, Secretary to the Royal Agricultural Improvement Society of Ireland, the prize-sheet of that Society; Mr. Deck, of Cambridge, a prospectus of his agricultural geology, in progress; Mrs. Coote, of Clifton, on the temporary substitution of sheets sewn together for rick cloths; Mr. Read, of Crediton, on the essential exclusion of horses having any existing constitutional defect, or any inherent or hereditary disease, as breeding animals; Mr. Sledman, of Horsham, on the use of soda, nitre, and salt as a manure for meadow land; Mr. W. L. Wakeley, on the quantity and quality of the flour made from his wheat; Mr. Ground, on his machine for cleaning corn and seeds; and Mr. George Reid, on the Dombasle ploughs.

Mr. Coddington, of Timolin, presented a copy of the report of the Ballytore Agricultural Society in Ireland; the Statistical Society of London, the last part of their Proceedings; Mr. Waterston, the first part of his Cyclopædia of Commerce, and Mr. Thomas N. Parker, of Sweeney Hall, near Oswestry, a set of his cubical measures, and one of the quicksilver levels invented by him.

At a Council held on Wednesday, the 11th of August, present—Thomas Raymond Barker, Esq., in the chair, T. French Burke, Esq., Rev. W. L. Rham, and William Shaw, Esq.,

Viscount Hood, of Bryanstone Square, London, and Whitley Abbey, near Coventry; John Bailward, Esq., of Horsington, near Wincanton, Somersetshire; and John Warsop, Esq., of Alconbury Hill, near Huntingdon, were elected Governors.

Nitrate of Soda.

The Council decided that such Members of the Society as had made trials of the Nitrate of Soda this year, should be requested to send in, as soon as convenient, a statement of the result produced upon their crops by the application of that substance as a manure, informing the Society of the details of weight and measure in each experiment, and stating whether the trials respectively were attended with success or failure.

Specimens of Wheat.

The Council also decided that the following recommendations of Professor Henslow should be made known to such of the Members of the Society as intended to transmit specimens of wheat this year for the Society's museum:—

"There should be about six entire specimens of each variety, with the root and leaves attached. Each variety should be formed into a separate bundle, by being tied to a stick or flat board, and the ears should be wrapped in paper to prevent friction; each bundle should be labelled. A few additional ears (about a dozen), of different sizes, should be put up, wrapped in paper; and this packet should also be labelled. There should be about half a pint of seed of each variety; or, where so much cannot be spared, about twenty seeds may be sent in a phial; and this also labelled. One of these labels should contain, besides the name of the variety, as many of the following particulars as can be ascertained, namely—1, The name of the grower; 2, The parish and county where grown; 3, The nature of the soil; 4, Any general observations respecting the amount of produce, peculiarity of culture, or precise conditions under which the culture took place. Where several bundles are packed in the same box, the whole should be carefully and closely packed, to prevent injury from mutual friction during their carriage."

Flemish Winter Barley.

The Rev. W. L. Rham exhibited specimens of the Flemish Winter Barley, of which 11½ qrs. per acre were reaped, near Ghent, in 1840. Mr. Rham also exhibited another variety of Winter Barley, originally from Brabant, with short, compact, six-rowed ears, and the straw rather shorter than the preceding; this variety was also very productive, and had been sown and reaped at the same time as the other.

The specimen grew at Winkfield, in Berkshire, from seed of the above crop, in March last, and was reaped on the 9th of August. The straw was long and thick, and the produce much greater than that of common Barley, but had not been at that time accurately ascertained.

The Agricultural Class of the Society of Arts at Geneva, presented their printed notices of proceedings from October, 1839, to January, 1841, along with a copy of M. Favre's work, entitled, "*Le Vétérinaire Campagnard*; Manuel Genevois de Médecine—Vétérinaire—Pratique et usuelle, à l'usage des Propriétaires de Chevaux et de gros bétail."

The Council then adjourned, for a fortnight, to the 25th of August.

Liverpool Meeting.

Selection of Seed Wheat.

The Judges having recommended the following samples of seed-wheat to be tried in the ensuing season, in reference to the Prizes offered by the Society for the best white and red Wheat, Henry Handley, Esq., President, William Miles, Esq., M.P., and George Kimberley, Esq., have been requested by the Council to try them comparatively on their farms in Lincolnshire, Somersetshire, and Surrey, respectively, and to report the result to the Council; namely—

Colonel Le Couteur's "*BelleVue Talavera*" White (spring or winter) Wheat, grown in the year 1840 on an argillaceous soil on his farm at Belle-Vue, in the Island of Jersey (made after potatoes, manured for Wheat with lime, about nine hogsheads to the acre; drilled at seven inches, three bushels of seed-wheat to the acre, producing 46 to 47 bushels per acre).

Mr. Daniel Maydwell's "*Chidham*" White Wheat, grown in 1840 on a chalk soil on his farm of Highlands, near Leatherhead, Surrey (grown from a clover-ley, with seven cart-loads of horse-dung per acre, drilled).

Mr. Joseph Pain's (Felmersham, Bedfordshire) Red Wheat, grown in 1840 on a gravel soil, on the farm of the Rev. H. D. Ward, from seed obtained from Mr. Johnson, of Burwell, Cambridgeshire (the preceding crop was mixed clovers, fed off with sheep, no extra manure being used; the seed was sown broad-cast, at about two bushels and three pecks per acre).

Mr. William Lake Wakeley's "*Champion Red*" Wheat, grown in 1840 on a sandy loam soil on the farm of The Earl of Thanet, from seed (without a name) obtained nine years previously from Richard Goord, Esq. (the Champion Red Wheat was grown on a bean stubble, and its peculiarities consist in its producing, in Mr. Wakeley's opinion, a greater quantity of flour from a bushel, and with less offal, than any other kind he was acquainted with).

At a Council held on Wednesday, the 25th of August, present, his Grace the Duke of Richmond, K.G., in the chair, Sir Francis Lawley, Bart., Thomas Raymond Barker, Esq., French Burke, Esq., George Kimberley, Esq., John Kinder, Esq, William Miles, Esq., M.P., Philip Pusey, Esq., M.P., and William Shaw, Esq.

The Council unanimously decided, that a deputation from the Society, consisting of three Members, should attend the great Annual Meeting of the Highland and Agricultural Society of Scotland, to be held this year at Berwick-on-Tweed, on the 30th of September, and William Shaw, Esq., of London, and Henry Stephen Thompson, Esq., of Kirby Hall, near York, were requested by the Council to form part of such deputation.

Liverpool Prize.

The Judges having represented to the Council that a Prize of 5*l.* had been awarded by them at the Liverpool Meeting, to Mr. Skirving, of Queen-square, for his exhibition of Roots, Seeds, Manures, &c. on that occasion, and had publicly announced their decision at that time by affixing to his collection a prize placard, the Council unanimously decided that a cheque should be drawn for this amount, and Mr. Skirving's name be duly registered in the list of successful exhibitors.

Trial of Seed-Wheat.

William Miles, Esq., M.P., one of Members of the Society selected by the Council to try the comparative merits of the samples of seed-wheat, exhibited at the Liverpool meeting, for the prizes offered by the Society, informed the Council of his intention to plant, together with the prize wheats, in October next, other wheats, both red and white, on the same soil and the same fields, in the neighbourhood of Bristol (where he hoped they would be seen growing together, and inspected by the Members, at the Bristol Meeting next year), not less than one acre and a half of each, separated from each other 18 inches; two bushels and a half of seed to be drilled in upon a clover-ley, previously manured with 10 bushels of bones per acre.

Specimens of Wheat.

W. R. Browne, Esq., of Chisledon, near Marlborough, presented to the Society specimens of wheat from standing crops of the present year, grown in North Wiltshire, namely, Whitington wheat (very smutty); Clovers red wheat, (a promising crop); and Burwell wheat, (150 acres clean and good); the seed obtained from Burwell as procured for the last 30 years. Mr. Browne promised to the Council a further report of the resulting particulars relating to these crops.

Siberian Vetches.

George Kimberley, Esq., presented a supply of Siberian Vetch seed, for the use of such Members of the Council as were desirous of making trial of its value. Mr. Kimberley stated that this was a most prolific kind of vetch, and should be planted in the month of September or beginning of October, rather closer together than in the case of beans.

Grasses from Van Dieman's Land.

S. Neil Talbot, Esq., presented to the Council a collection of some of the native grasses of Van Dieman's Land, obtained by him during his residence in that colony: consisting of—1. The *Kangaroo Grass*, which grew favourably on all soils, requiring to be sown thick, and yielding two tons per acre. 2. *Swamp Grass*, found growing generally in good soils, requiring to be sown thin, and yielding from 2 to 3 tons per acre; and three other varieties without names.—Mr. Talbot also sent a supply of the seed of the Kangaroo and Swamp grasses, for distribution and trial, and recommended their being sown in the mildest climate near the sea-side, in order that the grasses might become gradually acclimatized. Mr. Talbot suggested the propriety of sowing the seeds with as little delay as possible, and expressed his confidence that the cultivation of these grasses in England would be attended with success, on account of the similarity of the climate of this country and Van Dieman's Land; requesting to be favoured with the results obtained by the Society in this trial, and expressing his desire to communicate any further information that might be desired on the subject of the cultivation of these colonial grasses.

The Council returned their thanks to Mr. Talbot for this communication, and directed the seeds to be distributed among the Members present, and a portion of each variety to be transmitted to Earl Spencer, Mr. John Morton (at the Earl of Ducie's Example Farm), and the Royal Botanic Society of London.

Pruning Trees.

Chandos Wren Hoskyns, Esq., of Wroxall Abbey, Warwickshire, presented to the Council an elaborate paper (the result of many years' experience,) on the subject of pruning, promising a further communication, in continuation and completion of the paper, on the pruning, or rather *gradual reduction* of large branches, a part of his researches which Mr. Wren Hoskyns regarded as the most new, if not the most valuable of the whole. Mr. Hoskyns considered the points themselves adverted to in this treatise as well worthy of dissemmination, however the discussion of them might have suffered from any deficiency in his own powers of treating the subject; and he particularly invited the attention of the Journal Committtee to their importance, regarding the publication of the Society as the only channel through which they could come to the hands of farmers and practical men, instead of confined as hitherto, to books and men of science only. The Council returned their thanks to Mr. Wren Hoskyns for this paper, which was referred to the Journal Committee.

Nitrate of Soda.

Frederick Joly, Esq., of Threadneedle Street, London, communicated to the Society an interesting account, from one of his correspondents in Peru, of the natural production of nitrate of soda, as found in its native beds in South America, along with details connected with the mode of purifying the salt, the quantities obtained, and the price it originally bears as an article of commerce.

This communication was referred to the Journal Committee, and the thanks of the Council voted to Mr. Joly for his kindly communicating it to the Society.

Communications were received from Mr. John Walker, of Burton, near Worcester; Mr. Joseph Woolf, of Haslington Hall, Cheshire; Mr. G. N. Young, deputy from the Nova Scotian Board of Agriculture; Mr. Warren, with a copy of his Farmers' Account Book; and from the editor of the American Cultivator.

The Council then adjourned to Wednesday next, the 1st of September.

NEW MEMBERS.

The following gentlemen have been elected members of the Society during the month.

Ablett, Joseph, Llanbedr Hall, Denbighshire
Allibone, John, Hillinnrton, Rugby
Alington, Hildebrand W., Welton, Louth, Lincolnshire
Andrews, Thomas, Boarded Barn, Hampstead, Saffron Walden
Ash, Joseph, Chapel-Ash, Wolverhampton, Staffordsh.
Attenborough, James, Brampton, Northamptonshire
Bailey, George, Lea Hall, Boningale, Shiffnal, Salop
Blackman, Benj., Herstmonceaux, Hailsham, Sussex
Bathersby, A. B., Stoke, Bristol
Booth, J., Hamburgh
Bott, John, Coton Hall, Burton-on-Trent, Staffordshire
Bowman, Frederick, Duddington, Stamford, Lincolnsh.
Brook, Arthur Sawyer, Bexhill, Sussex
Brown, William, South Mills, Blunham, St. Neots
Bryant, James, Bishop's Lydeard, near Taunton, Somersetshire
Bunbury, Henry Mills, Marlstone House, Newbury, Berks
Cave, Charles, Fletching, Uckfield, Sussex
Carline, Richard, Lincoln
Carpmeal, William, 4, Old Square, Lincoln's Inn, and Streatham Hill, Surrey
Clark, John, Bellefield House, Trowbridge
Crocher, John Butler, Stourhead, Mere, Wilts
Cruso, F., Leek, Staffordshire
Currie, John D., Dysserth, Welchpool, Montgomerysh.
Daniells, R. A., Fairfield, Lymington, Hants.
Dempster, William, 13, Strand Street, Liverpool
Earle William, Liverpool

Ellis, Robert, Wern, Ruthin
Elwes, Henry, Colesburne, Andover's Ford, Gloucest.
Fane, Cecil, 11, Hereford-st., London
Farncombe, Edward, St. Leonard's, Hastings, Sussex
Fitzhugh, Thomas, Plas-Power, near Wrexham, Denbighshire
Forbes, Capt. John, R.N., Winkfield, Windsor, Berks.
Fornacre, Thomas W., Durston, near Taunton, Somersetshire
Foulkes, John, Milford House, Newton, Montgomerysh
Garnett, Joseph, Kendal, Westmoreland
Gearey, James, Great Westwood, Watford, Herts
Gibbs, Charles, Bishop's Lydeard Mills, near Taunton, Somersetshire
Goddard, Ambrose, The Lawn, Swindon, Wiltshire
Griffiths, Edward, New Court, near Hereford
Hancock, John, Hulse, near Taunton, Somersetshire
Harper, Hosken J., Davenham Hall, Northwich, Cheshire
Harper, Robert John, jun., New Lodge, Burton-on-Trent, Staffordshire
Hartshorne, Thomas, Silkmore House, Stafford
Hayward, Thomas, Wellingore, near Lincoln
Heywood, Francis, Liverpool
Holland, Samuel, jun., Plasy-Penrhyn, Port-Maddoc, Carnarvonshire
Homfray, John, Llandaff House, Cardiff, Glamorganshire
Horton, Rev. Joshua Thomas, Halton Place, Skipton, Ormskirk, Lancashire
Hughes, Thomas, Oswestry, Salop
Icke, William, Wooley, Brewood, Wolverhampton
Jefferies, N.N., Milbrook, Southampton
Jenaway, Joseph, jun., Clifton-upon-Dunsmore, Rugby
Jessen, Rev. Cornelius, Enville Rectory, West Stourbridge, Worcestershire
Jones, John Edward, Baysham, Ross, Herefordshire
Jones, Thomas, Burfield House, Bristol
Juckes, Richard, Cotwall, Wellington, Salop
Kaye, John, Oatlands, Timperley, Altringham, Cheshire
Kesterton, Thomas, Woodlands, Leatherhead, Surrey
Kirkpatrick, William, Ryde, Isle of Wight
La Touche, David, Marlay, Dublin
Leigh, Herbert, Donnington, near Hereford
Longley, William, Camber Farm, Rye, Sussex
Large, L., Kencot, Burford, Oxfordshire
Miles, John William, Leigh Court, Bristol
Moore, William, Callow-land Farm, Watford, Herts.
Mott, John, The Close, Lichfield, Staffordshire
Mott, T.T., Barningham Hall, Aylsham, Norfolk
Percival Charles, West Haddon, Northamptonshire
Phelps, Thomas, Sellack Vicarage, Ross, Herefordshire
Pilley, Samuel, Sudbrooke, near Lincoln
Potter, William, Liverpool
Radcliffe, Rev. Walter, Warlegh, Plymouth
Rawes, Richard, Kendal, Westmoreland
Richmond, James, Salford, Manchester
Robinson, George, Barton-on-Humber, Lincolnshire
Robinson, William, Barton-on-Humber, Lincolnshire
Roscow, Rowland, Liverpool
Royce, John, Boxted Hall, Colchester, Essex
Scorer, William, Lincoln
Scott, William, Winterton, Brigg, Lincolnshire
Sewell, John, Caldecote, Stoke Ferry, Norfolk
Sidebotham, C. H., Ashley Cottage, Altringham, Cheshire
Simpson, William, Newark, Notts.
Smith, Benjamin, Duckmanton Lodge, Chesterfield
Smith, James, Deanston, Perth
Smith, Spencer, Brooklands, Southampton
Stephenson, George (Civil Engineer), Tapton Hall, near Chesterfield, Derbyshire
Stockley, Joshua, Ivetsey Bank, Brewood, Wolverhampton, Staffordshire
Sturge, Young, Bristol
Taylor, Samuel, Eccleston Hall, Prescot, Lancashire
Taylor, Joseph, Bishop's Storford, Hertfordshire
Taylor, William, Wellington, Salop
Thresher, Frederick, Bentley, Farnham, Surrey
Tindall, Thomas, Aylesbury, Buckinghamshire
Tollemache, J., M. P., Tilstone Lodge, Tarporley
Turner, John Henry, Summerford, Wittegham, East Grimstead
Tryon, Thomas, Bulwick, Rockingham, Northamptonsh.
Ullock, Thomas, Bowness, Westmoreland
Wade, Charles, Hawkshutts, Brewood, Wolverhampton
Walker, C. L., Redland, Bristol
Warren, Rev. John C. Blair, Horkesley Hall, Colchester, Essex
Waters, Robert, Boscombe, Amesbury, Wiltshire
Webster, James Philip, West Heath Cottage, Congleton, Cheshire
Wedge, Francis, Somerford, Wolverhampton
Welch, James, Kingston, near Taunton, Somersetshire
Weld, Edward, Pilewell, Lymington, Hants.
Wheble, Edmund, Great Baddon, Chelmsford, Essex
White, John, Chorley Wood, Rickmansworth, Herts
Wilbraham, Hon. Richard Bootle, M.P., 55, Portland Place, London, and Blythe Hall, Ormskirk, Lancash.
Winsor, George, Sarratt, Kingslangley, Herts
Woodcock, Richard, Llanfyllen, Montgomeryshire.

THE FOLLOWING IS A LIST OF THE JUDGES WHO OFFICIATED AT THE LIVERPOOL SHOW.

Short-Horns.

William Smith, of Market Rasen, Lincolnshire
Charles Stokes, of Kingston, near Kegworth, Leicester
John Wright, of Romeley, near Chesterfield, Derbysh.

Herefords.

Robert Jolliff, of Long-Ashton, near Bristol
John Buckley, of Normanton Hill, near Loughbro'.
W. Fisher Hobbs, of Mark's Hall, near Coggeshall, Essex.

Devons.

John Elliot, of Chapel-Brampton, near Northampton
William Trinder, of Wantage, Berkshire
John Warsop, of Alconbury Hill, near Huntingdon.

Mixed or other Breeds.

John Hall, of Wiseton, near Bawtry, Nottinghamshire
Edwd. L. Franklin, of Ascott, near Wallingford, Berks.
C. Hillyard, of Thorpelands, near Northampton.

Horses.

John Raymond Barker, of Fairford Park, Gloucestersh.
Geo. Clark, of Barnby Moor, near Retford, Notts.
Charles Bowman, of Greatford, near Market Deeping, Lincolnshire.

Leicester Sheep.

Thomas Chapman, of Stoneleigh, near Coventry, Warwickshire
John M. Ashdown, of Uppington, near Shrewsbury
William Pratt, of Newfields, near Long-Itchington, Warwickshire.

Southdowns.

Henry Overman, of Weasenham, near Rougham, Norfolk
Thomas Weall, of Woodcote Lodge, near Beddington, Surrey.
James Brine, of Tolpuddle, near Piddletown, Dorset.

Long-woolled Sheep, not Leicesters.

Francis Brown, of Welbourne, near Grantham, Linc.
Thomas Short, of Martin, near Bawtry, Nottinghamshire
William Ladd, of Ellington, near Huntingdon.

Pigs.

Jesse Kemp, of Utterby Groove, near Louth, Linc.
Martin Nockolds, of Saffron Walden, Essex
Daniel Larratt, of Thurlby, near Bourn, Lincolnshire.

Implements.

Josiah Parkes, (Civil Engineer,) of College Street, Westminster
R. S. Graburn, of Branswell Cottage, near Sleaford, Lincolnshire
George Legard, of Fangfoss, near Pocklington, Yorksh.

Seed Wheat.

George Kimberley, of Trotsworth, near Egham, Surrey
Samuel Jonas, of Ickleton, near Saffron Walden, Essex
William Robinson, of Hemel Hempstead, Hertfordshire.

MR. GREY ON NORTHUMBERLAND FARMING.

In the two last numbers of the *Farmer's Magazine*, I read a statement of the mode of farming pursued in Northumberland, by Mr. Grey, of Dilston, a gentleman well known in the agricultural world as an eminent breeder and a most intelligent and enlightened practical farmer. I perused the statement with some attention, as I lived many years in that county, several of which were passed in the immediate neighbourhood of Mr. Grey's farming; and I looked with some anxiety to see if that gentleman had thrown any new light on the system, or if any improvements had been lately introduced. I have found none, but I send a few remarks on several of Mr. Grey's observations, so far as my acquaintance with that and other counties may direct.

It is matter of regret that Mr. Grey has not devoted a double space to his statement, and comprehended the description of the clayey districts of Northumberland, lying in various quarters, but principally stretching along the coast from Newcastle northwards, by Morpeth, to Alnwick; at that distance more turnip land is found, and the district is not so thoroughly clayey. The description is chiefly confined to the turnip district in the northern part of the county, and adjoining the Scotch border. The turnip loams of these districts are not excelled by any in the three kingdoms, and the system pursued has always been reckoned the most perfect. The size of the farms, the wealth, intelligence, and enterprise of the farmers, have long attracted attention; while the causes that have produced the superiority have been in many cases unwillingly recorded and but seldom imitated. The holding of lands by lease, and the consequent distribution of capital, are the foundation of the whole system; and is very justly pointed out by Mr. Grey as operating in conjunction with other causes, but mainly in itself, to the production of the improved system as it now exists in that county. The sterility of church lands wholly results from the mode of tenure, and are not unnoticed by Mr. Grey. The letting of land on long leases does not suit in many parts of England; but if any further proof were wanting, the opinion of Mr. Grey will add a heavy consideration in favour of the advantages of that mode of tenure. The course of cropping is that of five years, with two years in grass; on very light loams the grass is continued for another year, and on clays the four years' shift yet prevails. On turnip lands experience has amply demonstrated the superiority of two years in grass over the course of four years; the land acquires a vegetable freshness for future production, especially of turnips, which no supply of animal manures will compensate. Mr. Grey doubts the success of the system on the flinty and chalky soils of the southern counties, but from experience I would expect the same result; for wherever chalks and flints abound, there is always a very considerable degree of moisture, and very often an adhesive subsoil, and the very dry arid chalks are not worth ploughing. The greatest risk of failure would occur on the hot burning sands; on which, and on all the weaker soils, the crops of clover and trefoil are very thin and meagre, arising from want of "rest," though they are regularly folded over with sheep. Mr. Grey has not mentioned if the poor clays of England and of his own county would not be much improved by rest and pasturage. Grasses will succeed on all arable lands if properly and judiciously cultivated. On the cultivation of turnips, nothing new is presented in Mr. Grey's report.

Many valuable observations occur in the statement on various subjects. On hay-making each country prefers its own mode, and probably very justly; but in my own opinion northern hay-making may be much improved. In live stock, Mr. Grey prefers small useful animals to large ones. In rearing of calves, I beg leave to dissent from using hay-tea, or linseed meal, or any other substitute; every animal should suck the dam, and it is only allowing a less quantity. Feeding from pails never can equal nature's mode; of this truth no practical man will entertain any doubt. The feeding of cattle in fold-yards is well known. Mr. Grey decides at once in favour of carts over waggons for farming purposes, and on undeniable grounds, viz., of general utility; even admitting an inferiority in some one single point, I had taken the same grounds in speaking of the utility of swing and wheel ploughs. On that subject Mr. Grey makes a few observations without giving any decisive opinion. It is well known that the protuberant breast of a plough that lays the neatest and best-cut furrow is bearing on fallow lands, by reason of carrying and pushing the soil before it; and this objection tells heavily against the Scotch plough, in the waxy clays of South Britain; but on loamy soils, which do not possess the adhesive quality so strongly as to encumber the plough, and make the work unsightly, it may be supposed that a projecting mould-board will work and stir the land better than a more narrow point, which will pass easier through it. It is now proposed to have mould-boards for each purpose. The late trials of ploughs in England and in Scotland, by dynamometers, have only led to the "gratifying" conclusion, that each country possesses the best.

The rotations on clay lands, mentioned by Mr. Grey, are the six years' shift, well known in Scotland on the sea coast, where manures are abundant; and the four years' course, with beans and peas in the fourth year alternately, to ensure the success of clover, which is very apt to fail by too frequent repetition. On his own estate, Mr. Grey adopted a rotation not often used, but which certainly deserves very great commendation:— 1st year, fallow, dunged; 2nd, wheat; 3rd, grass; 4th, grass; 5th, oats; 6th, beans, drilled and hoed; and 7th, barley. The soil was too stiff for turnips, and reckoned so for barley, but which was profitably grown on the stale winter furrow, mellowed by frosts. Two years' grazing is a novel plan on clays growing beans and wheat, and in that locality; but the future improvement and great increase of rent, from 500*l.* to 800*l.* during declining years, are mainly to be attributed to that circumstance. Dung was liberally applied, and also lime, during the first course, and the whole management shows great practical skill on the part of the manager. When the bean crop is sufficiently early removed, Mr. Grey prefers to lay the lime on the bean stubble; it is a very common practice in those districts to apply lime to stubbles in autumn for a succeeding crop of turnips, as it lessens the spring labour, and diminishes the risk of losing the turnip crop by using quick-lime just before sowing. It is customary in Derby and Leicestershire to apply lime on oat stubbles for wheat, and it is scuffled in among weeds and stubble, affording no very great specimen of clean farming; but on bean tilth, well cleaned and hoed, a pulverized surface will be obtained for mixing with the lime, though it cannot be so well incorporated with the soil as when laid on the fallows previous to drilling and scuffling. The intervention of winter before the crop is sown, will be objected to by many persons. This rotation claims especial notice from farmers who use lands of that description, and who can lay aside the prejudice against pasturage in a rotation. Not all Mr. Grey's eloquence—his unrivalled skill, nor his long and extensive experience—would persuade a landowner or farmer in South Britain, that pasturage was anything but a dead loss. They must see every year a crop to be cut and carried, or a tall fodder for sheep, or they think a year is lost. Against the sheep grazed on an acre they place the probable crop of three quarters of oats, but cannot think that half a quarter more would soon be obtained by the rest in pasturage. They have never seen it, and it does not form their custom. The benefit lies in the whole rotation, and is not immediately visible and tangible like a crop of oats, and therefore it cannot exist. I have seen the introduction attempted, and the land was as often ordered to be ploughed up. Mr. Grey prefers the broadcast sowing of grain in direct opposition to Mr. Binns and many others.

Mr. Grey dwells for some time on the hiring and bondage system of farm labourers, by which every married householder is engaged to afford a woman or lad for farm work at a stipulated rate of wages throughout the year. Like all human arrangements, good and bad properties attend it; but when properly exercised, I never saw very much occasion for complaint. On both sides of the Tweed the Scotch system is execrable: women are turned out, "in all weathers," to fill and drive the dung carts, to make up the dung heaps, and to pick and pull turnips in the fields. A harshness attaches to the Scotch people in their treatment both of man and beast, which most perceptibly decreases so soon as the border river is left to the southwards only a short distance; for on my removing to Mr. Grey's neighbourhood, I found much gentler treatment prevail; wages are higher — the work is of a lighter nature — no dung carts are filled during winter—and some attention is paid to fair and foul weather in the out-door work. For my own part, I am against females doing any out-door work, for it never fails to vitrate the character and debase every finer feeling; hay and corn harvest and turnip sowing are always urged as exceptions, but greater difficulties have been overcome than to find a substitute.

The form of farm buildings, recommended by Mr. Grey, is the common one of three sides and open to the south; his idea of the thrashing machine standing so as to throw the straw into the middle of the straw barn, in order to save labour in carrying it about, is a nicety seldom heeded in contriving farmeries, where we see barns and granaries at opposite extremities, and the stack-yard also removed, so as to create much unnecessary labour. In the southern counties the granary is purposely removed and divided into boxes of several feet in depth. The buildings in general are devoid of any uniformity or systematic arrangement. Mr. Grey mentions 30 acres a day to be sown by the grass seed machine, with a quick horse, man, and boy; I always finished 40 with ease in 9 or 10 hours.

Mr. Grey states that some improvement has been effected on the cottages of farm labourers: there is certainly great room; for the palaces in which the farmers live form a most marked contrast with the pinfold of the cottager of 16 feet square, where a man, wife, son, daughter, and children, are all huddled together without proper regard to common decency. If these counties be in the lead of the southern counties in improved agriculture, they are far behind in the treatment and accommodation of the most useful class of society.

Reports of the different counties, drawn up by practical and scientific men in the various divisions, would form a most useful labour for the Royal Agricultural Society, and also plans of dwelling houses and farmeries for the different localities for farms from 100 to 1000 acres. Such employment would afford scope for practice and science, and from which much would infallibly be learned, much more than from petty essays and heterogeneous compilations.

Mr. Grey seems a great expectant from the "opus magnum" of chemists and others; in the mean time let us avail ourselves of his sound practical statements. CULTOR.

AN INQUIRY

AS TO THE CAUSE AND REMEDY FOR THE DISEASE IN TURNIPS KNOWN BY THE NAME OF CLUBBING.

SIR,—I have been much annoyed, and suffered considerable loss in consequence of the turnips in certain portions of my fields becoming clubbed. These pieces, varying from 20 poles to half an acre, have always been subject to this disease; and this year, though lime and chloride of calcium were drilled with the manure, still the same pieces of land are marked by this disease, and the turnips entirely spoiled; while in other parts adjoining, the crop is as good as can be desired. The soil is sand, blowing sand, in a substratum of a still lighter nature, and there is nothing discoverable in the soil from the parts adjacent. Can any of your numerous correspondents furnish me with a remedy for this evil? They would be conferring a great benefit on agriculture, particularly on your obedient servant, R. C.

ON STORING TURNIPS.

SIR,—I have observed in different agricultural publications many methods recommended for the storing of turnips in winter; and amongst all those plans I have never seen anything so simple or so efficacious as the one I have adopted with great success for several winters. I am only a small farmer, and usually store for winter and spring use about 30 tons of Swedish turnips. My method is, to make a long heap of turnips about a yard and a half wide at the bottom on a dry piece of ground, and pile them up in a triangular form as high as they will stand; then cover them with sods cut from a moss, which I procure about half a yard square. The sods when properly cut and taken care of will, from the quantity of heath in them, last several winters. Those I intend for covering my winter stock of turnips this season having been cut from the moss in 1839.

I have not found in my stock of turnips, since I adopted this mode of preserving them, 20lbs. of rotten or decayed turnips; and I usually have some as late as the end of May or beginning of June, at which time this year they appeared as fresh and juicy almost as when they were stored in October last.

Any farmer living near a moss has a ready, cheap, and most efficacious covering for his turnips; and I recommend all who have it in their power, at least to try this plan one year.

Your obedient servant,

August 3, 1841. A CHESHIRE FARMER.

TREATISE ON THE NATURE AND PROPERTIES OF THE SOILS OF NORFOLK, SUSSEX, AND ESSEX,

CHEMICALLY AND GEOLOGICALLY CONSIDERED IN RELATION TO AGRICULTURAL PURPOSES.

BY CAPT. H. ALEXANDER, ROYAL STAFF CORPS, &C.

At the present moment every thing which can tend to the enlargement of the production of food is of momentous consequence to the whole kingdom, and whoever turns his attention to this subject, whether theoretically or practically, deserves well of his fellow men. For of all others, the increase of the productive powers of the soil, limited as our space is, becomes, from the rapid increase of the population, daily and hourly of greater importance. We some time since quoted a portion of Capt. Alexander's prize essay on the soils of East Suffolk; since which this persevering officer has continued the same course of study, which has finally led to the above pamphlet. To the officers of this as well as other corps, this kingdom has been indebted to many valuable treatises and discoveries, the productions of those leisure hours which a state of peace creates; and where the only object, as in this case, "is to promote plenty and contentment in this his native land," it ought to be received with the same generous and kindly feelings. We shall quote a few extracts, which seem peculiarly appropriate to our immediate county, in the hope they will induce a more particular attention to the whole. Upon the nature of *mildew*, the author thus speaks:—

"The result of our observations upon chalk is, that from its tenacity it is valuable as an addition to sand, mixed sand and loam, gravel, London clay, and more especially to peat, or fibrous deposit: and as such soils generally are deficient in the constituents of all fertile soils, an addition of this to the above enumerated ones affords very immediate and beneficial effects; but in all the soils and strata compounded of the three, chalk, London clay, and marine deposit, a sufficiency already exists in the compound, and therefore on these soils its value is chiefly to be estimated by its combination with other substances, so as to form chemical affinities, and produce other compounds.

"When soils are much composed of chalk, without a due admixture of sand and silicious matter, the epidermis or outer coat of the straw is not so hard as it should be; on these lands mildew is prevalent, while near the sea coast where the marine deposit of sand forms the principal ingredient, and salt as a solvent is present, mildew is rarely to be met with. In order to avoid this destructive disease, so detrimental to the farmer's interests, a healthy epidermis is the first essential point; to this we must direct our attention. If the wheat plant is healthy, it will of course better resist the attack of any disease floating in the air, of whatever nature it may be. A healthy plant, like a healthy man, will resist its attacks longer than an unhealthy subject; this must be beyond a question or doubt. Now, the next point is to ensure a healthy plant; whatever primitive earth the soil is deficient in—whether it be sand, lime, or alumina—to make it a good wheat land, and to ensure a healthy plant, this must be added. Silex and potash are necessary constituents of the wheat plant; the former for the epidermis, the latter as assimilating with the juices of the plant, and forming the greater part of its fibrous structure. Wheat is seldom cultivated after wheat, because it exhausts the soil of those qualities which the plant requires, and which are necessary for its perfection.

"Wheat might be grown after wheat, as long as it could find alkalies to feed on, and silex to give it a healthy epidermis; but, without the latter, any disease floating in the air, to which wheat is liable, would render it open to its attack. We have heard farmers frequently exclaim, 'Oh! what a beautiful field of wheat that was three days since—now it is destroyed with mildew:' to the unobserving eye that field of wheat looked thriving and healthy; its internal structure, no doubt, had been plentifully supplied with the necessary alkalies, but it was deficient in an healthy outer coat. We shall perhaps be better understood if we explain the nature of mildew. 'Mildew' is a parasitical plant of diminutive growth, which has no power of growing except from the supply of sap from the wheat straw or other substances exuding from vegetables; the seeds of this plant are floating in the air generally in the summer season. It is supposed by some to be fostered and brought to maturity by the Barberry bush, and it is possible that this plant may afford it support without itself suffering perceptibly, and seeding, may supply seed to other plants: and on this account mildew may be first discovered in the neighbourhood of the Barberry bush: but unless the predisposing cause existed in the stalk of the wheat, the mildew could not by possibility take effect. Now the predisposing cause, as before stated, is in a great measure in the soil; and thus we find some districts much more liable to it than others.

"Those which are most proverbially allowed to possess this propensity are the lands about Offton, Barking, Somersham, Witham, Willisham, &c., in the county of Suffolk. Now these soils contain a superabundance of chalk, and very little marine deposit or silicious sand in their composition; therefore in luxuriant seasons, when warm nights and days with humid atmosphere cause a very rapid growth in the straw of the wheat, the stalk not containing sufficient silex to defend it by a hard epidermis, is either pierced by insects or bursts its pores, and the juice exuding forms the food or soil in which the parasitical mildew first begins to show itself, and inserting its roots into the straw, finds its nourishment not only in the juices proceeding up the stem, but also the connexion of the sap-vessels being injured, the upper sap falls and affords nourishment to the mildew until the green kernel is entirely exhausted of its internal milky composition. The agriculturist so soon as he discovers the disease, seeks a partial remedy by severing the crop for harvesting, which being done, no sap flows upwards, and the upper sap, being now cut off from moisture, consolidates, so as not to return through the collapsed and injured sap-vessels; by this means a half-filled kernel instead of an exhausted one is secured. But the proper mode of preventing the disorder is an addition of sand and salt to the staple of the land; and in such situations the soil being deficient in silex, or not having that due mixture which enables the roots to absorb sufficient silex to form a hard epidermis, the object is to add such substances as will afford the power: we therefore recommend sand—red sand which contains oxide of iron is the best—but drift sand and road sand, the harder particles of cinder dirt, refuse from the soap boilers, barilla, and salt to enable the water to form a solvent of all these, will be the most efficacious remedy. A high state of cultivation will not improve these lands so much as a supply of these component parts of a hard epidermis to the straw; for these lands are generally in themselves good staple lands, and if properly managed, highly productive in wheat and beans.

"A well manured field (we mean the manure from cattle) is not so necessary for a wheat crop as the constituents of a healthy wheat plant, viz.—silex and potash. Our wheat is generally planted on old layers; now if the layers be not ploughed in too deep, they will form during the decomposition of the vegetable matter with 'the oxygen of the atmosphere, sufficient carbonic acid gas to feed the plant during its first stage of growth;' the decomposing vegetable matter is in itself of but little benefit to the plant, any small quantity of alkali contained in the decomposition being too minute for calculation, its great use being 'the formation of carbonic acid gas, which is absolutely necessary for the growth of all the plants in their first stage.' It follows from what we have heretofore said, that the only way to prevent mildew from attacking wheat, is to be careful that the land contains sufficient silex and potash. We have dwelt thus long on this one stratum, chalk, because it is one which forms the greatest variety in its chemical compounds, and exists in the greatest abundance."

Upon summer fallowing, his observations appear to be particularly worthy attention:—

"Before we dismiss our observations upon this and the last named soils, we will direct attention to the consideration of the great benefit that is attendant upon summer fallowing, which cannot be attributable merely to the lands being at rest, but must have some relative bearing upon chemical changes that occur by exposing a new surface continually to the action of the atmosphere; for it cannot be supposed that the mere resting of the land can, by time only, permit an exhausted field to recover its strength. Then if the exposure to the atmosphere be the real cause, it may be worth while to endeavour to grow some plant of value in ridges, while the intervals are subject to repeated exposure by turning to the atmosphere. This awakens an enquiry whether, while growing turnips on heavy land, we ought not to grow them upon ridges, with intervals that may be tilled during their growth; and whether these intervals should not be three or four feet wide.

"If the atmospheric air be in its composition formed of the very same materials as nitric acid, it is reasonable to infer that the chemical changes effected by the sun, or by the showers, or by the exposure to the air, or by all these together, convert the alumen into a nitrate of alumen, or some other nitrate is formed, which stimulates the surface to the production of a great abundance. We are not aware that a greater degree of heat than 90°, or a less than 70°, is not favourable to the production of nitrate, and too much light is also detrimental, but sprinkling of moisture assists much. We find also that our lands produce finer crops the following year when they have been worked under the influence of alternate sun and shade with showers, rather than under a severely scorching summer. There is much variance of opinion as to the benefit of ploughing in green crops; one error in pursuing this plan is the mistaking the value of the quantity ploughed in for the benefit of the shade; we doubt not that it will be discovered that after every ploughing subsequently to May, the throwing on a fair seeding of brank, or any other rapid growing plant, a native of a hot climate, would be beneficial in the highest degree, inasmuch as the young plants form so many parasols to prevent the too intense action of the sun; it is therefore of no avail to wait for a more luxuriant growth than the first leaves, and then to plough them into the earth; if left longer, they will exhaust from the land as much as they return to it in the shape of food. Again, by the fallowing of land the primitive earths become further disentegrated; there are none so completely reduced to powder (although to our eyes they may seem so) but when left exposed to the action of the atmosphere a further disintegration proceeds; and as rain brings with it ammonia which acts powerfully in decomposing various soils, we shall be no longer surprised at a rested piece of land recovering its fertility, silicious and aluminous matters having been disengaged; and the field is again fitted for bearing a crop with the additional assistance of vegetable and animal manure, one part forming ammonia, ('ammonia absorbed by the clay or ferruginous oxides is separated by every shower of rain, and conveyed in solution to the soil,') and the other carbonic acid gas during its decay. We know that all rocky soils contain more or less of various oxides, 'those of iron and alumina form solid compounds with ammonia;' nitrogen is also necessary for the growth of plants.

"In these tenacious lands we would recommend the stubble to be left short, and immediately after harvest to be sprinkled with two tons of lime per acre; and before it has obtained carbonic acid from the atmosphere, let it be ploughed in. When ploughed again to the surface in the spring, let half a ton per acre of common salt be cast over the ground, which having remained exposed for three weeks, let the ploughing proceed overward or at right angles with the former ploughings.

"For these lands we recommend compost heaps of sides of banks and out-hurlings of ditches, lime, salt, and yard litter of wet straw, &c.; but we recommend the compost heaps should be allowed to remain a whole year with occasional turnings; but upon good deep long-cultivated soils, where lime and salt are already in combination, we do not object, but rather recommend the application of raw manure from the farm yard, especially where the crop to be grown is mangel wurzel or Swedish turnips upon the Northumberland system, viz.—ridges, where the intervals are stirred by the horse hoe, or by the plough; in these cases each heap becomes in some sort a nitre bed, and the shading by the turnips assists the formation of the nitre by the marly compound of the land and the straw manure thus incorporated, to which free access of air is given; while the leaves of the plants defending from excessive rain as well as from sun-shine, assist upon the same principle.

"We may account for certain fertile soils in these counties growing crops of wheat and beans successively; in this case the soil contains so much natural affinity for the azote of the atmosphere, that the hoeing which the beans in their alternate seasons require, operates in the same way as a summer fallow in less favoured positions; it is probable that in other situations, if a larger interval were left for tillage between the drilled beans, and this interval horse-hoed during summer, beans and wheat might be grown alternately. In these soils, so favourable for this alternate state of cropping, we do not find veins of sand to form pools of water, but a retentive soil uniformly spread throughout, capable of holding water of absorption for a considerable time; consequently the tax upon these lands during dry weather amounts to nothing.

"The next composition which falls under our observation is, that where there has been a thin deposit of the subsiding 'diluvial alluvium' evenly laid over the sandy marine deposit, and when the marine deposit is of a tolerably heavy class of sand, these are mixed soils, and contain sufficient tenacious clay to constitute a firm surface; they require no draining, are cultivated in great breadths, produce good turnips, which can be fed by sheep upon the spot where they grow, and are thus kept in good condition without much expence of tillage; and in amount of produce of wheat, few lands can surpass them. Chalk or lime should always form a constituent part of the manure used on these lands, and clover should always be cultivated without any admixture of rye-grass, because in dry seasons rye-grass will take the manure of these lands as much as wheat itself; these lands are probably deficient in gypsum. London clay, or mud of the estuaries, is a great stimulant to clover on these soils."

AGRICULTURAL QUERIES.

ON TAN AS MANURE.

Sir,—As there have been many ingredients of late years found to possess manuring principles, that were unknown in former times; such as *bones* and many other things, and as I think that man a great benefactor to his country who can introduce a new and cheap manure so as to increase human food, I have no doubt but you will be willing to promote that end, by endeavouring to ascertain by your paper, whether there is any ingredient that can be added to rotten and decayed Tan so as to make it a manure, as there is an immense quantity at present totally useless.

Your obedient servant,
A Tanner.

" A Lindsey Farmer" wishes to be informed in what manner, and at what cost, wheat is cut by "bagging," as was recommended by a member of the Fairford Farmer's Club. Some of our correspondents may be kind enough to favour him before harvest.

ANSWERS TO QUERIES.

TO PURIFY WATER IN PONDS.

Sir,—One of your correspondents asks how to purify pond water. I would recommend him to scour out his pond perfectly clear of mud, and then to have a pump and well at least fifty yards distant, and on the same level from the pond; to which he must dig a drain a foot wide at the bottom, and fill it up a foot deep with gravel, and above that with the earth that came out. The water will then filter through the gravel from his pond to his well, and be nearly equal to spring water. This plan has been found successful upon the gaulty soils in Huntingdonshire, where they depend wholly upon ponds for their supply of water. H. S.

FINGERS AND TOES IN TURNIPS.

The following extract from the Transactions of the Highland and Agricultural Society of Scotland, for the present month (June), p. 52, being a prize essay by Mr. M. M. Milburn, of Thorpfield, on the "Insects injurious to Turnips," will answer the query of Juvenis in the late number of the *Mark Lane Express.*

"There is a too well-known disease to which turnips are liable, called 'fingers and toes.' The fibres or tap-root of the turnip or both thicken, and knobs of every conceivable shape are formed; these swell and crack, and of course begin to putrify; this goes on, and the plants disappear rapidly, until a field of promising turnips are not worth five shillings per acre. Those plants with the most fibrous roots stand the attack the best. Every conceivable variety of opinion has been mentioned as the cause of this disease. I shall not even advert to them, but give simply the results of my own observation. Knowing certain fields to be subject to attacks, I narrowly watched the progress of the plants from sowing time forwards. The first thing I observed before they were fit for hoeing, were several ash-grey coloured flies, resembling the house fly, but somewhat smaller. On examining the nervures of the leaves I discovered eggs of the flies, resembling the fly blows of the *Muscidæ.* In a week maggots were formed, which crawled into the ground and attacked the root of the plant. A puncture, however slight, will cause a flow of sap to the place, and a tubercle or excrescence is formed; in this the maggot fastens. I have detected six or eight at one plant; these continually gnaw it until they either destroy it, or change into pupæ, and the plant putrifies and dies. Sometimes only one fibre is attacked, and then the plant survies. They emerge from the pupa, and assume the fly form — some in the same season, but more in the ensuing year, to spread again the work of destruction. I believe it is the *Anthomya brassicæ*, of Bouche. The length of the fly is about three lines above ash-grey. Male fly an indistinct black mark on the back. The wings transparent. I have taken them, and bred them; and having watched every stage of their existence, I am therefore clear as to the connection of the insect with the disease. A preventive to their ravages I have found in a summer fallow; it seems to banish the parent flies, which otherwise are of still habits, whereas the frequent succession of turnips, attended as they are by a great mass of decomposed vegetable matter, encourage the flies and perpetuate the evil."

GRUB IN TURNIPS.

Sir,—A small white grub, with a black head, somewhat larger than the cheese maggot, is destroying our crops of turnips completely. Probably Mr. Matson, or some eminent practitioner, would favour the poor farmers with some advice on the subject; although I fear it is too late this season to apply any remedy, as gas-lime, salt, &c. Would Mr. Cuthbert Johnson be so obliging as to give us his opinion?

I am, Sir, your obedient servant,
York, Aug. 13. Ebor.

OBSERVATIONS ON A GRADUATED OR SLIDING SCALE OF DUTIES ON FOREIGN WHEAT,

On the Principle of the Duty increasing 1s. per quarter on every decline of the averages below 64s. per quarter, with a fixed duty at all times of 5s. per quarter, with remarks on the supposed "Natural Protection" of the English Agriculturist.

In making the following calculations, the writer has founded them on the fact, that London, containing a population of one and a half million of people, or 1-20th of our whole population, the great supplies of bread food must come generally from the distant provinces, and consequently the average price of wheat will be higher in London by the amount of expence incurred in bringing it to market—say 4s. to 5s. per quarter; and experience proves such averages range from 4s. to 5s. above the general averages of the Kingdom.

Suppose the average price of the best red wheat in London is 68s. per quarter—then deduct 6s. duty on

Foreign wheat, 6s. for freight, factorage, &c., from Hambro', or 12s. Total charges, 12s. from Hambro' to London. Thus, 68s. in London, less 12s., would leave the Hambro' shipper 56s. And 68s. in London, less freight and expences 6s., would leave the Lynn shipper 62s.

When the general averages are	The London average is	6s. Freight, &c. leaves the Lynn shipper	Leaves the Hambro' shipper		
63s.	68s.	62s.	6s. duty, *and* freight 6s.	56s.	Thus when our prices ruled from 54s. to 64s. in England, we should probably have an importation to the extent of 2½ millions of quarters, and other grain in proportion.
62s.	67s.	61s.	7s.	54s.	
61s.	66s.	60s.	8s.	52s.	
60s.	65s.	59s.	9s.	50s.	
59s.	64s.	58s.	10s.	48s.	
58s.	63s.	57s.	11s.	46s.	
57s.	62s.	56s.	12s.	44s.	
56s.	61s.	55s.	13s.	42s.	
55s.	60s.	54s.	14s.	40s.	
54s.	59s.	53s.	15s.	38s.	
53s.	58s.	52s.	16s.	36s.	Probably 1½ million quarters.
52s.	57s.	51s.	17s.	34s.	
51s.	56s.	50s.	18s.	32s.	
50s.	55s.	49s.	19s.	30s.	
49s.	54s.	48s.	20s.	28s.	Probably 3 or 500,000 quarters of wheat, and other grain in proportion, if the harvests were good abroad as well as in England.
48s.	53s.	47s.	21s.	26s.	
47s.	52s.	46s.	22s.	24s.	
46s.	51s.	45s.	23s.	22s.	

Under the general average of 46s. or 51s. *in London*, importations from abroad might here cease, *even in abundant years*; although in 1825 and 1826, wheats were bought at 18s. to 20s. at Hambro', and 21s. to 22s. at Dantzic; but the Foreigner would generally ship freely to this market, and pay the duty, when our averages were 51s. to 53s., which leaves him 32s. to 36s. free on board at Hambro,' &c.; the *natural productive* price of wheat at all the Danish and Prussian ports mentioned below being about 28s. to 30s. per quarter. This would be a great boon to the consumer; as Foreign wheats would be brought into consumption at 51s. to 53s., instead of 73s. to 80s., as under the working of the present law.

When the price of wheat is 51s. per quarter, the quartern household loaf costs 6d.; and if wheat declined in price to 42s. it would cost 5d. Every fall of 10s. per quarter making a difference of 1d. in its cost; but the expence of grinding, baking, &c. is always 1½d. the loaf, whether prices are high or low.

A quarter of wheat makes 120 loaves of 4lbs. each; an acre of land producing 4 quarters of wheat, is 480 loaves, which, at 1d. each, is 40s.: and supposing the tenant to pay 20s. an acre *rent*, it is ½d. per loaf; if he pays 30s. per acre, it is 2-3rds of a penny, which is the whole of the rent which the landlord gets, whether wheat be cheap or dear. The outcry against the *rapacity* of the landowners is very great, whilst, in fact, if they got *no rent whatever*, the price of the quartern loaf could only be ½d. to ⅔rds. of 1d. cheaper. The landowner has not raised his rents during the last 3 years of high prices; and the 20 to 30 millions sterling which the public have paid more for corn under the present law than they would have done had a similar one to that proposed been in operation, has mostly gone into the pockets of the agriculturist, the speculator, and the Foreigner, with a very small proportion to the revenue.

The writer of these observations has endeavoured to shew the minimum price at which Foreign wheat might begin (in very abundant seasons) to *come into competition* with our home growth—say at 31s. on Lord John Russell's, and at 46s. on the above plan. The latter may protect the English grower at a low rate of profit, and it would keep our prices tolerably steady, and the price of bread about 5d. or 6d. the quartern loaf; and it would likewise remedy the evil of the present oppressive law, which has borne so heavily on the consuming classes.

The average system would be greatly improved by confining the returns of London and Liverpool to sales ex-ship; and by the adoption of the above plan (which assumes 46s. to 50s. as the protection to the grower, and 63s. to the consumer) its evils would be virtually nullified: the gradual decline of 1s. on the only *workable* part of the fluctuating scale, say from 50s. to 63s., or 13s. per qr., and a fixed duty of 5s., it could NOT PAY the speculator to embark in fraudulent attempts upon the averages. Other parties would step in and effect sales when he had only obtained half his object. It cost the party who "operated" last summer an immense sum, but it answered their purpose; for when the averages are 63s. they gain 10s. by rise of price to 73s., and save 23s. 8d. in duty, which is 33s. 8d. per qr. This is certainly a great temptation and premium for dishonesty.

The 5s. FIXED DUTY *falls upon the consumer, and is an equitable tax or protection for the exclusive rates which bear upon land, and the* protective *duties which the farmer pays on Foreign articles.*

The FLUCTUATING DUTY *will fall upon the Foreigner, should he force his wheats upon our market when we do not require them; since he must sell us his corn subject to such duties, and consequently at a less price than he would otherwise obtain if we had no such protection.*

Mr. M'CULLOCH, a great advocate for free trade, says, "the *natural protection* the British agriculturist has and *of which no one can deprive him*, is the expence incurred in bringing wheats from Dantzic to the English market, say 10s. to 12s. per quarter." Now this calculation is fallacious; for he assumes there will be landing charges into warehouse, fire insurance, turning, rent, loss in measure, &c., *none* of which would be incurred in one shipment in a hundred; for the Foreign wheat would be sold ex-ship, on payment of the 8s. duty, as well as the English wheat. The Foreigner is not likely to warehouse his wheat in London when he can keep it at home, at one-fourth of the expence. The expenses on wheat from Lynn to London, being the same as from Hambro' and many other ports, the Norfolk grower has no such "natural protection" over the Foreigner—the amount of *duty* paid is the only protection.

He further says—" Were our ports always open, under a moderate duty, nothing would be gained by pouring in supplies at any particular moment; they would *only be furnished when necessary*." This is totally incorrect—they would always "*be furnished*" whenever the low prices abroad left the Foreign shipper *a profit* in the London market; and if from abundant crops our prices fell to 35s., the Hambro' prices would most likely fall to 25s. *or under;* and surely our "*necessities*" would not then require any Foreign corn, when our markets were glutted with our own growth! Mr. M'Mulloch may say Foreign wheat cannot be grown at the low prices of 20s. or 25s.—that remark equally applies to the English at 35s.; but a surplus of wheat having been produced, like all other articles of trade, the grower must sell it for what it will fetch.

The same writer asserts that the wheats from Hambro' and the lower parts of the Baltic, are of inferior quality—this is only true as regards the produce of some parts of Holstein and the Danish Islands; but even the wheats shipped from thence are quite good enough to come *into competition* with the general quality of the Irish and Scotch shipments. Dantzic, upon which he founds his main arguments, rarely supplies us with one-sixth of our imports; and the quality of the wheats shipped from Rotterdam, Antwerp, Hambro', Kiel, Lubeck, Wismar, Rostock, and Stettin, &c., is fully equal to the best red English wheats.

Whatever alterations are made in the corn laws, they should be based on due protection to the agriculturist against very low prices, and the consumers against high ones, and that we (30 millions of people!) should be as little dependent as possible upon the Foreigner for any part of our food.

S. S.

HORSE POWER UPON RAILROADS.—" An unparalleled instance of the power of a horse, when assisted by art, was shewn near Croydon. The Surrey iron railway being completed and opened for the carriage of goods all the way from Wandsworth to Mertsham, a bet was made between two gentlemen, that a common horse could draw *thirty-six tons* for *six miles* along the road, and that he should draw his weight from a dead pull, as well as turn it round the occasional windings of the road. A number of gentlemen assembled near Mertsham to see this extraordinary triumph of art. Twelve waggons loaded with stones, each waggon weighing about three tons, were chained together, and a horse, taken promiscuously from the timber cart of Mr. Harwood, was yoked into the team. He started from near the Fox public-house, and drew the immense chain of waggons with apparent ease to near the turnpike at Croydon, a distance of six miles, in one hour and forty-one minutes, which is nearly at the rate of four miles an hour. In the course of this time he stopped four times, to show that it was not by the impetus of the descent that the power was acquired; and after each stoppage, he drew off the chain of waggons from a dead stop. Having gained his wager, Mr. Banks, the gentleman who laid the bet, directed four more loaded waggons to be added to the calvacade, with which the same horse again set off with undiminished power; and still further to show the effect of the railway in facilitating motion, he directed the attending workmen to the number of about fifty, to mount on the waggons, and the horse proceeded, without the least distress, and, in truth, there appeared to be scarcely any limitation to the power of his draught. After the trial, the waggons were taken to the weighing machines, and it appeared that the whole weight stood as follows:—12 waggons first linked together, 38 tons 4 cwt.; 4 waggons afterwards attached, 13 tons 2 cwt.; 50 labourers, supposed to be 4 tons; total weight drawn, 55 tons 6 cwt."—*Liverpool Mercury.*

GIANT CLOVER.

[The subjoined is a description of the clover, for which a prize was awarded by the Yorkshire Agricultural Society.—Ed. F.M.]

Wm. Stickney, of *Ridgmont*, presents for the inspection of such as are interested in agricultural pursuits, a new variety of Clover. The seed which produced this plant and others, was given to Wm. Stickney by a friend resident in Denmark, and with the following description:—

" Giant Clover (*melilotus lencantha maxima*) grows to a height of eight to fifteen feet; should be sown in March or April, about fifty grains to a square foot; one pound weight of seed contains about 200,000 grains; to obtain tall plants or for seed, it is enough to sow ten grains to a square foot; it grows well on all soils except in swampy ground; the plants are believed to last thirty years in the same ground; they reach their perfection in the second or third year."

A small quantity of seed was sown in a box in the month of April, 1839, at Ridgmont; the box was placed under glass, where it remained until the plants attained to the height of from one to two inches; they were then transplanted in the open air, and had very soon to sustain some of the most severe frosty nights, which we had in the month of May, but did not appear to be at all affected by it—they soon began to grow at the rate of one inch in 24 hours.

Some time after Wm. Stickney received the above-mentioned seed, he met with the following description of what he supposes to be the same plant, in the *Hull Rockingham*, of April, 1839, headed

" NEW ERA IN AGRICULTURE."

" A gentleman has just arrived from Georgia in Asia, who brought with him a new colossal and prolific clover seed, from Buckhara, which he is going to submit to Mr. Loudon; the above clover seed, just imported, grows to the enormous height of twelve to fifteen feet, and can be cut every month. But this is not the only valuable property of this most extraordinary production of the vegetable kingdom. Out of the plant a hemp is prepared, which is so highly esteemed in this distant region, of which it is a native, that preference is given to it over all other sorts of hemp. Should the plant succeed in England, and of which there can be but little doubt, it will form a new era by rendering this country independent of foreign supplies of clover seed."

" It is fortunate it has arrived in time to be tried this year; it must be sown in April. It is said that each grain will produce 300,000 seeds."—*London Paper.*

The dried plant now exhibited, is the growth of the year 1840, being the second year after sowing, it attained the height of $15\frac{1}{2}$ feet.

The plant in blossom is of the present year's growth (1841), near ten feet high, and still advancing. The shorter plants are from seed sown in May last, but did not vegetate until the beginning of June; they are therefore the growth of about two months, and are now growing at the rate of something more than an inch in twenty-four hours; and it is supposed they are now in a proper state to cut for soiling. WM. STICKNEY.

Ridgmont, August 2nd, 1841.

N.B. Wm. Stickney has found by experience that the above description of clover, if allowed to produce seed, is a biennial plant.

ON BRAN AS MANURE.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

SIR—In confirmation of a letter that appeared in your paper on July 19, respecting the analysis and use of bran as a manure, I beg to state the following facts:—In 1839, some bran had been thrown on a meadow carelessly and inconsiderately, and where-ever so thrown, the marked improvement in the cut of the grass was so great as to draw attention to the fact; indeed, the benefit was greater than I ever saw from any other manure, when applied in such quantities, and at a cost that would be likely to leave a return for the outlay. This induced my giving it more attention in 1840, when I applied one-third of a ton to an acre, at a cost, at the time, of 37s.; the return was an increase of half a ton of hay to an acre over the ground not so manured, equal last year in value to 3*l.*, and the after-math was doubled, which I consider was worth 10s. per acre to me, and to all persons short of feed (which was generally the case in that year) it would have proved of still greater value. Thus the account stands:—

Cost of bran....	£1	17	Increased value of hay..........	£3	0
Profit per acre ..	1	13	Do. of after-math	0	10
	3	10		3	10

On the whole, it appeared so beneficial and remunerating, that I have this year drilled some with my turnips; the soil is a sandy loam; the quantity used is a quarter of a ton per acre, at present worth 1*l.* 2s. 6d., being at the rate of 4*l.* 10s. per ton, whilst other portions of the field have been dressed with yard manure. Unto the present time, I am not able to detect the slightest difference; the portion where the bran is used being quite equal to the dunged ground; but when the crop is matured, and in its greatest perfection, I will not fail of making a further report.

In applying the bran, I have damped it to prevent its blowing away, or else have chosen a damp day without wind; but since the letter above alluded to appeared in your paper, I have heard of its being drilled with the turnip seed quite dry, and that it has run remarkably well.

On the whole, I feel pretty certain, that the moderate cost, the great facility of many farmers obtaining it from his neighbouring miller, its easy application, and its good result, will soon induce it to be reckoned among the most economical, and therefore the most beneficial of the manures that has lately called for the consideration of the agriculturist. I remain, Sir, yours most respectfully,

Steep, near Petersfield, Aug. 1841. J. WELCH.

SHEEP WASHING.—From the mildness of the winter and spring months, the clip of wool this season may be expected to exceed an average. The washing of sheep in this country seems less understood, or at all events less attended to, than any other department connected with the management of stock. Some years ago, I spent a few weeks in the highlands of Pennsylvania, with Dr. Rose of Silver Lake, one of the greatest enthusiasts in the management of stock we ever met, and, in particular, with regard to the washing of his sheep. For many years, Dr. Rose has been in the habit of keeping upwards of ten thousand woolly people of various descriptions, principally for the purpose of lending out in shares. During my stay at Silver Lake I had the pleasure of paying a visit to the Messrs. Hogg, nephews of the Ettrick Shepherd, (who farm extensively in shares on the estate of Silver Lake,) to see the principle upon which they washed their sheep. In place, however, of washing them in a running stream, as is too generally adopted in this country, they had constructed a pond, of a size corresponding to the extent of the sheep to be washed, which was filled with water from the adjoining creek; and at the commencement, several scores of the flocks were carefully hand-washed, when immediately the water in the pond assumed the appearance of an immense lake of soap-suds; the remainder of the sheep, amounting to upwards of forty scores, were compelled to swim across the pond, and during their passage they were twice dipped over head and ears by two of the shepherds, who were placed at proper distances from each other; and on their landing at the opposite side ot the pond, it was found, upon examination, that their fleeces were completely relieved of every description of filth whatever, although they still assumed a dusky colour, and on that account I suggested to the Messrs. Hogg, the propriety of swimming them across a pool of clear water, which was immediately adopted, and, in consequence, the wool became as white as the mountain snow. It was evident, however, that the sheep which were last washed were the whitest. Mr. Ballantyne of Holylee, who ranks second to no man in Scotland in the management of stock, erected last season a pond of the same description as the one now described, and which has produced a very marked improvement on the fleece. Those who have a knowledge of chemistry will readily perceive the nature of the changes which are effected in the process of sheep washing. The yolk (which may with some propriety be considered the food and protection of the fleece,) being a true soap, mixes with the water, but is decomposed by the earths in solution in the water, or raised from the bottom of the pool; these combine with the oily portion, and leave the alkaline free, which again combines with the oil still remaining in the wool, and also extracts it. On this account, the longer we wash the sheep in the same pool it forms the stronger alkaline solution, and acts more effectually in cleaning the wool and freeing it from oil, which explains satisfactorily the reason why the last washed sheep at Silver Lake were the whitest. The alkaline solution will also act on the oil or grease in the smearing material in the same manner, converting it into a soap soluble in water, and it will consequently be detached from the wool. It must, therefore, appear evident that all sheep which are washed upon the principles here described, whether light or heavily laid, will ultimately be reduced to the same degree of cleanness—a result devoutly to be wished by the manufacturers and wool buyers of our country. It is therefore to be hoped, that at no distant period this method of sheep-washing will be universally adopted all over Scotland, which will in no small degree stamp the Scottish fleece with a character for purity which it has hitherto unfortunately never attained.—*Correspondent of Edinburgh Weekly Journal, June* 15, 1841.

THREE-HORSE PLOUGHS.—At the Chippenham ploughing match dinner last week, Mr. R. D. Little said, he was glad to see that bigotry and prejudice were fast giving way, and that three-horse ploughs were becoming more rare every year. The society had been established for 5 years, and he had never yet seen a three-horse plough win a prize; as it was necessary that farming operations should be carried on in the least expensive and most effective manner, it was clear that the third horse was but waste of labour. Mr. Little also said that he had attended the meeting of the Royal Agricultural Society at Liverpool, and could assure the company that if the worst ploughing at Chippenham had not been better than the best ploughing there, the judges would not have felt themselves justified in awarding the prize.—*Devizes Gazette.*

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR AUGUST.

On the whole, this has certainly proved one of the most extraordinary months, for the season of the year, we have had occasion to notice for a very lengthened period; not that we mean to assert that it must be considered *decidedly* inimical to the farmers' prospects, but that the variations in the weather in almost every part of England, have been great almost beyond recollected precedent. From the first until the fourteenth, scarcely a day, or even a night, passed without heavy, and, in many instances, deluging showers of rain falling in nearly or quite the whole of our rural districts, which, as a matter of course, considerably retarded the operations of the sickle, which had been partially commenced in parts of Essex, Kent, and Devonshire about the 10th; while they had the effect of causing apprehensions to be entertained of the harvest being very late, and of much of the grain receiving considerable damage. In some respects these anticipations have been realized, but we are happy to state not to any serious extent; the principal losses sustained being those of a few breadths of wheat having sprouted ere they were cut in Kent, and some barley having been carted in very unkindly condition in parts of Hampshire. After all, however, it is highly satisfactory to find that, in almost every county north of the metropolis, no damage of moment has occurred, owing to the process of cutting being invariably later than in those parts before-mentioned. During the whole of the second week of the month, the most unfavourable reports reached us from nearly the whole of our correspondents regarding the grain crops, and the utmost anxiety was manifested to learn the state of things elsewhere; in fact, it was stated, on apparently well-grounded authority, that a very alarming deficiency would be inevitably apparent in the produce of all kinds of the soil's produce, but more particularly as relates to that necessary article of consumption, wheat. But, thanks to a Divine Providence, those gloomy forebodings were in a great measure dispelled by the resplendent, nay, almost unprecedentedly fine temperature which was fortunately experienced during the subsequent ten days. The effect caused by this improvement was that of the greatest activity being, even so far north as Northumberland, observable in the fields; while, in most of the southern and western districts, immense quantities of wheat and barley, with a large supply of peas, reached the mow, or stack yards, in good condition. Although it proved occasionally cloudy, and scarcely a day passed without rain towards the latter end of the month, the whole land at intervals rang with the sound of rustic toil; the earth yielded forth her increase to gladden the heart of the husbandman; the barns became a busy scene, caused by the active operations of the thrashers. Ceres never exhibited herself to greater or more cheering perfection than when the merry "harvest home" was celebrated; while joy and gladness beamed in the countenances of all who partook of the wholesome and unostentatious festivities of those who may truly be considered a nation's greatest pride—The British Yeomen.

A very lively and, it must be admitted, serious topic of consideration now presents itself for review—viz., the productive qualities of the crops now so closely requiring the growers' attention. As is almost invariably the case, before any extensive supplies of corn can be brought to the various markets for sale—consequently the present time is by far too soon to form a correct estimate of future rates of currency—the most ridiculous and exaggerated statements have been made and widely circulated, to the effect that a large importation of wheat, of foreign produce, will be required to make up the deficiency so glaringly apparent. Our honest opinion is that, even so far as we have proceeded, it would be highly premature to venture an opinion which can in any way be considered as based on principles of an unerring standard; yet we cannot but intimate, that so far as our observations have extended, we see no just cause to anticipate so great a deficiency as some parties would lead us to suppose. True it is, that the unevenness of the growth of corn, even on lands of equal value, and those too extremely well farmed, has been the subject of general remark; wheat growing on some patches not exceeding Two, while that on others coming up to Seven and Eight quarters per acre! And we cannot conceal this important fact of the high winds having beaten down, especially in exposed situations, and lodged some of the heaviest and best descriptions; yet, with all these disadvantages, our firm impression is, after the most practical proofs, that there is no room for that despondency which we have been told is causing so much attention. Judging, therefore, from the weight of the samples which have passed through our hands, and the large numbers of stacks of early wheats which are already completed even North of the Humber, we firmly believe that nearly or quite *an average* yield of wheat, barley, and oats will be realized; while that of peas and beans will prove the most extensive gathered since 1820. Minute, indeed, have been the attentions which we have paid to the passing events in the agricultural world; consequently the above remarks will, we trust, be found as impartial and as correct as could possibly be conveyed to the minds of our readers. This state of things, under existing circumstances, is one of the most paramount importance to us as a nation; and it is to be highly desired, that no relaxation of the present spirit to produce an adequate supply of wheat to meet every demand on the part of our rapidly increasing population, should ever show itself. The great secret is to make ourselves wholly independent of other producers than our our own for the necessaries of life; by which, and which alone, can we expect to become rich, powerful, and happy. The absurd fallacy of "mutual exchange" with foreign states would not be so beneficial to us as we have heard it stated, although, perhaps, it might create a kindly feeling towards us. But to this doctrine we cannot in any way subscribe. Abstract reasonings, founded on hypothetical bases, afford, possibly, palatable food for those who can digest it; but we always prefer dealing with plain straightforward matter-of-fact details, which, with all submission to those who profess to have higher and more elevated notions of national polity, have always had a more beneficial influence than all the theories which ever came under our notice.

There is another subject, and one too of no less importance than that which has reference to *quantity*, to which we beg now to direct attention—it being that of the *quality* of the crops. Notwithstanding that a very large portion of the new wheat which has reached Mark Lane, and many of the leading provincial markets of consumption, has been much deficient in this respect, we consider that no fair criterion can be reasonably formed of it for some weeks hence; as it is well known that the rapid, and necessarily hurried, manner in which the flail or threshing machine is set to work, and when too the corn is seldom in what may be termed "a fit state" for such a process, no reasonable farmer will condemn such parcels without further investigation. Should it turn out, as we have every reason to hope will be the case, that a good available supply of dry heavy parcels will have been secured, speculation in foreign corn will not be of that wholesale character as has been the case at several previous corresponding periods; yet we are fully impressed with the belief that the future currencies of wheat will not be very low, at least during the approaching winter: hence a fair opportunity will be given to release, at moderate rates of duty, those supplies which will be on their way hither from the Baltic, Black Sea, &c. These observations may, per chance, be deemed not very obvious, with the glaring fact staring us in the face that the whole of the bonded stocks—which now consist in the United Kingdom, of about 700,000 quarters—will shortly be entered for home consumption at nominal duties. But we would have it borne in mind, that at least four-fifths of it will mostly command good prices, and that they are in the hands of those who will be able to hold on, rather than submit to any great reduction in value. Doubtless, when there is more leisure than at present, the receipts of new wheat will be great: but then they will require a large admixture of dry qualities to make good saleable flour, and, consequently, will not have so ruling an influence upon the averages as would otherwise be the case. Though we feel tolerably certain that the import will not rule so low as 1s., yet it is evident that it will, about the third week in September, decline to 2s. 8d. per quarter, as we have intimation of further improvements in the returns.

The continued humidity of the atmosphere has prolonged to an unusually advanced time the hay harvest. So late as the 24th a conclusion had not been arrived at, either in Yorkshire or Westmorland. The quality of the crop has, we understand, received much damage, while no inconsiderable portions have been wholly lost; yet this article has not been selling at very high figures, and the supplies have not exhibited any material falling off. Owing to the moist state of the soil, a good second cut of both meadow and clover-hay is anticipated.

In traversing the country, the eye is met in all directions by one continuation of weeds; in fact, we cannot but express our surprise that corn, under such circumstances, should have progressed so favourably; for instance, amongst many of those breadths of wheat and barley which have been lately levelled, the weeds have proved to have exceeded a FOOT in height, thereby endangering the purposed crop. We would advise all engaged in farming pursuits to look well to the state of their land, since it is very evident if it be allowed to remain foul that the ends aimed at will never be accurately obtained. Care should be taken not to allow the collection of obnoxious plants *in any part*, as, if they be not carefully destroyed, the farmer's exertions will, in a measure, be rendered nugatory.

The stocks of old wheat on most farms have now become very circumscribed, yet they are by far more extensive than was generally anticipated. Let us trust, therefore, that this year's produce will last as long as that of last, and all will be right.

To "take time by the forelock" we consider a most excellent maxim, and had it been better attended to than has proved the case, happier results would have been the more readily arrived at. In instancing this position, we would state that that wheat which was cut very early in the month has threshed out finer, and sold at much higher figures than that which remained longer in the fields. It too often happens that wheat is suffered to become over-ripe, when the grain is much diminished from exposure, and loses a large quantity of its farinaceous properties. Whenever the sap begins to have a downward tendency, no new nourishment is imparted to the ears; and instant preparations, by the employment of additional numbers of hands—since for these no reasonable expense should be spared for the time—should be made for cutting.

The stock markets have been on the whole very moderately supplied; and, on account of the great demand for suckling calves, much higher figures have been obtained for them, the last quotations being from 48s. to 54s. each—but store sheep and beasts have moved off slowly at about stationary prices. Fat stock has in most instances sold freely, but a trifling abatement must be noted in the currencies. As might have been anticipated, there has been a steady inquiry for wheat, both of home and foreign produce, and improved rates have been obtained without difficulty. In other kinds of farm produce no alteration of moment has taken place. The sales of colonial wool in London—at which, about 22,000 packages have been offered—have gone off steadily, and previous rates have been obtained by the importers.

By letters from Scotland we learn that harvest work has been but partially commenced; but, with the aid of fine seasonable weather, much progress would be made in a short time. The corn and pulse are favourably represented, and fair average growths are fully anticipated.

In the south of Ireland a large quantity of wheat, barley, and oats has been already stacked; but in the north very few stacks have yet made their appearance. No complaints of moment have reached us, and most of the growers seem to look forward to a fair return. As with us, the corn markets have advanced, although the supplies have not shown any material deficiency.

The following is our usual statement of the supplies and prices of fat stock exhibited and sold since our last report. The former have comprised 13,297 beasts, 140,900 sheep and lambs, 1,210 calves, and 3,600 pigs; while the latter have ranged as follow:—Beef from 3s. 2d. to 4s. 10d.; mutton, 3s. 6d. to 5s.; lamb, which is now rapidly going out of season, 4s. 10d. to 5s. 6d.; veal, 4s. 4d. to 5s. 2d.; and pork, 4s. to 4s. 10d. per 8lbs. to sink the offals. On most market days, the attendance of both London and country buyers has been sufficiently numerous, while the finest beasts and sheep have commanded a ready sale, and their quotations have been fairly supported; but the value of the middling and inferior descriptions has somewhat declined. It is pleasing to intimate that, comparatively speaking, a very small number of any kind of stock has proved affected with the prevailing epidemic, which still continues, in a mild form, in most of our grazing districts. The receipts from Scotland have consisted of about 700 beasts, and 1,230 sheep, most of which have come to hand much out of condition, and produced very low figures; indeed great losses have been sustained on many occasions by the supplies. Scarcely anything worthy of remark has been doing in lambs, calves, or pigs, which have fallen full 2d. per 8lbs.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, August 25, 1840, and Monday, August 23, 1841.

At per 8lbs. to sink the offals.

	August 25, 1840.		August 23, 1841.	
	s. d.	s. d.	s. d.	s. d.
Coarse & inferior Beasts	3 2	to 3 4	3 2	to 3 4
Second quality do.	3 6	3 8	3 6	3 8
Prime large Oxen	3 10	4 0	3 10	4 2
Prime Scots, &c.	4 2	4 6	4 4	4 6
Coarse & inferior Sheep	3 4	3 10	3 4	3 6
Second quality do.	4 10	4 6	3 8	3 10
Prime coarse woolled do.	4 6	4 8	4 0	4 4
Prime Southdown do.	4 10	5 0	4 6	4 10
Lambs	5 0	5 8	4 6	5 4
Large coarse Calves	4 2	4 8	4 2	4 6
Prime small ditto.	4 10	5 0	4 8	5 4
Large Hogs	4 0	4 6	4 0	4 6
Neat small Porkers	4 8	4 10	4 8	4 10

SUPPLIES.

	August 24, 1840.	August 23, 1841.
Beasts	2,960	2,903
Sheep and Lambs	24,200	28,290
Calves	139	155
Pigs	415	615

Up to Newgate and Leadenhall markets, scarcely any slaughtered meat has been received since our last from any quarter, while the demand has proved dull, at depressed rates of currency.

LEICESTERSHIRE.

In my last report of 22nd June, I was lamenting the effect of the long drought we had experienced and its injurious effects upon vegetation; since that time to the 15th inst., we have not had three consecutive fine days, with a temperature ranging from 50 to 55, and an unusual absence of sun for the summer season. This weather had great influence upon all description of crops, which showed itself in a variety of forms, and to an extent which was truly alarming to the farmer and to the public generally; for what can be more disastrous to the country than a bad harvest, and an inferior quality of grain? I will endeavour to give as accurate an account of the wheat crop in this county as possible, from what I have been able to observe, and from information which I have collected. The wheat plant was allowed to be thin on the ground generally in the spring, and the drought of May and June stunted the growth on all sand and gravelly soils, but was favourable to those of a stronger and better kind. This is a circumstance in itself which does not augur abundance, still it frequently produces corn of an excellent quality: this expectation, however, from the constant rain which has fallen for the last two months has vanished, and it must be acknowledged that the quality is much deteriorated. On the best soils, where the plant was abundant and luxuriant, the crop has been laid so flat by the repeated rains, that it approaches a state of rottenness, and is grown through by rank weeds; the corn in such cases will be very light, and if well got, will yield but little meal. The quality on other soils which has stood well, has been injured, but in very different degrees, by *rust*, *red gum*, or *mildew*, which diseases Professor Henslow now considers as belonging to only *one* species of parasitic fungus. Much depends as to the extent of the ravages of this disease on these crops, as regards the quality of the wheat of the present harvest; and I am bound to observe, that it is very difficult to find any crops in this neighbourhood which are entirely free from contamination. During the whole time of the late rains it was obvious to every one, that very few fields of wheat presented the usual bright straw which the crop exhibits in healthy seasons, but a sombre dark green was the prevailing colour; and it was fearful to contemplate the result up to the 14th inst. Happily, after a night of steady rain, it cleared up to bright sunshine by noon, and the most beautiful harvest weather has since prevailed, with the exception of a shower on the evening of the 17th. This sudden change from wet and cold to dry, with a hot sun, has had a most salutary effect upon all corn crops, and the improvement as to colour is most cheering; the dark green has given way before the genial heat of the sun, and great approaches are made towards the bright yellow the farmer is so anxious his crops should present; but I cannot say they are ever likely to equal in this respect the perfection of former years. The effect which this change of weather has had upon the grain itself is equally beneficial, and will greatly improve the quality; and such which escaped the disease before-mentioned will produce an excellent sample. The infected crops will, (supposing them to be well harvested) yield a very inferior quality to what we have had for three or four years part. After all, such has been the effect of the fine weather, that should it continue, there is no cause for alarm; for though the quality will be somewhat inferior, still I believe we may expect an average quantity. From the favourable seed-time both in the autumn and spring, a greater breadth of wheat was sown than usual, and I do not apprehend that the yield will be much below an average. The diseases above stated have not been so fatal as appearances indicated three weeks back, and I believe but few crops are *extensively* injured by them, yet scarcely any have escaped attack. These circumstances are frequently exaggerated by the great fears of the timid, or the avarice of the interested; but if it pleases Providence to send us fine weather for another month, all danger of scarcity or fear of bad bread will be past. Having dwelt so long upon the wheat crop, I shall only state, that a full average of all spring corn may be expected; but the barley will not be of so fine a quality as in some seasons. We have not experienced such a protracted and bad hay-harvest for many years, and much has been put into the stack in very bad condition—good old hay will be valuable. The corn harvest is begun in all parts of the county, and both oats and barley in some forward situations have been housed in excellent condition. Wheat ripened very unkindly, and though cutting is progressing rapidly, but little is got in, as it requires much field room; but, should this beautiful weather continue, many fields will be cleared by the end of this week. The grass crops and lattermaths are very luxuriant; both cattle and sheep have had abundance, but the cold wet weather was not favourable to rapid feeding; yet they may be said to have done well. Store beasts are still dear, though something lower than in the spring. Beef and mutton retain their price, making 6d. to 6½d. per lb. The turnip crop, especially the Swede, is variable, and have not flourished well, the weather being too wet; very little fly has been present, excepting in the early sown; some of them were much injured by this pest. The smother fly has made its appearance in some crops; but, upon the whole, an average produce may be calculated upon. Mangel wurzel, potatoes, and carrots, are generally good. In consequence of the late unfavourable weather, wheat has advanced, and in some instances, reached 80s. per qr. I regret that no great improvement has taken place in the price of wool, but it may be quoted 2s. higher than at shear-day; and as the Leicester trade is improved, and all hands employed, the market is very firm, and further advance anticipated; so that holders may not be under alarm as to any reduction: good lots are making 28s. per tod. Our labourers are receiving 15s. per week, when at day work; but good hands at mowing and reaping, are earning from 25s. to 30s.—Aug. 24.

SUFFOLK.

Harvest was partially commenced in this county the latter part of July, with a few pieces of Talavera wheat; and at the time we are writing, and in our immediate vicinity, many of the largest farmers have nearly finished cutting wheat, while many have scarcely begun; such also we find to be the case in various parts of the county. In some districts reaping and mowing wheat was generally begun about the 9th or 10th instant, while in others the 17th or 18th inst. (weather permitting,) will be the time of commencing. We have taken several rides through many of our best corn districts within the last month, and our opinion now of the wheat crop, notwithstanding the quantity of rain which has fallen during that time, is that that crop is not so much injured as we at that time anticipated it must be—we allude more particularly to a kind of white wheat with a rough chaff, called Tunstall, from being first raised and brought to notice by a gentleman residing in a parish of that name in this county, and which kind of wheat is extensively grown in High Suffolk. At the time to which we allude, it was looking very dark, as if affected by mildew, but within the last ten days the appearance has decidedly improved, and it is now wearing a bright healthy appearance, and up to the present time we neither know, see, nor hear, of injury received from the weather, further than [harvest work is impeded, and the time of bringing new corn into the market protracted. We see no reason to fear the wheat crop will be below a fair average in bulk of straw, and quantity and quality of grain. The barleys are beyond an average bulk; they are generally very much laid and twisted about, making a second growth; the produce no doubt will be good, but the quality we fear will be deteriorated by the second growth of oats; but few are grown in this county. The pea and bean crop promise at least a fair average. Fine and warm weather is wanted for the root crop, as much as for harvest operations. The plant of both turnips and mangel-wurzel are particularly good, and with favourable weather henceforth, may yield a good supply of winter provender. The second growth of clover is very luxuriant, exceeding in most cases even the first crop. In fact we may confidently, and I hope thankfully, assert, as far as Suffolk is affected, that with the blessing of God on our endeavours to ingather the fruits of the earth, there will be no lack of food for man or beast.—August 14.

ESSEX.

Since the last report, we have had weather chequered alternately with sunshine and rain; but the latter has not fallen in quantities so as to injure, but merely to retard the harvest progressing so satisfactorily as we could have wished. Monday and Tuesday, 9th and 10th fine, 11th rain, 12th fine, 13th and 14th showery, with heavy rain on the morning of 14th, fine alternoon with wind. Sunday 15th, and Monday 16th, fine; light showers on morning of 17th, till eight o'clock, wind rising, and wheat is now gathering in all directions; the barometer sinking. The alternate rain and sunshine has had a beneficial influence upon the wheat since my last statement; so much, that upon pieces where mildew seemed all but certain, appearances have changed, and the straw has ripened with that fine yellow harvest tint that always denotes a good sample; indeed I never remember so great a change for the better, in so short a period of time: the bulk of straw is also greater in sheaf than was anticipated, and a considerable portion is already carried for stacking, but not at present in fine grinding condition. I have been most anxious since I forwarded my last report, to correct any impression of an unfavourable nature, and I am now quite of opinion, that we shall have a full average crop of wheat, both as regards quantity and quality, provided the weather is still favourable to harvest it. The barley is retrograding, from its being so much lodged, and a second ear is springing from the stem, so much, that fields are assuming a green, rather than a harvest tint; the same injury has attached to oats in a similar state, and such pieces will be best secured by immediate cutting. Mangel wurzel, and Swede and white turnips, are also rapidly improving under the influence of warm weather. The second crop of clover is now ready, and if well secured, will greatly add to the amount of winter store. The leases, however, under which farms are held in this county, usually restrict the tenants from mowing more than once; this is an injurious provision, as the land is not injured thereby, provided the hay arising is expended upon the premises; and twice the amount of profit may be obtained with a proportionate increase of manure, by feeding out the hay rather than the green crop, unless foddered by horses or cattle in inclosed yards, for which purpose it is an excellent substitute for tares or lucern, being superior to the former, and almost equal to the latter; and it may be in most seasons insured by cutting the first crop early, and more certainly by giving a slight dressing of good compost immediately after. The producing a succession of food for foddering horses and cattle through the summer months is most important to the farmer, for by no other means can he produce so great a return of profit from the land, or raise so much excellent manure; and the second crop of clover is best adapted of all others for this purpose, as it is presumed lucern is not grown in sufficient quantities at present as a substitute. But even this valuable plant may be produced in situations that a few years ago were thought unsuited for its cultivation; but as the system pursued here with all the details will occupy too much space for a report, I will at the first opportunity give you a separate paper upon the subject.—Aug. 17.

BEDFORDSHIRE.

Had we sent our usual monthly report immediately at the close of July, or even a week later, we could only have swelled the tone of complaint and lamentation concerning the weather, which had become far too general throughout the county. It now becomes our pleasing duty, however, to substitute the language of joy and rejoicing for that of lamentation and woe. In the latter end of the second week of the present month, after two unusually wet moons, appearances were more favourable; and on Monday, the 16th, exactly with a change of the moon, the weather brightened up, and has continued remarkably fine ever since, so that the harvest is progressing admirably. In the forward districts a good breadth of wheat will be safely secured by Saturday night, and another such a week will leave but little of this kind of grain in the field, when a good portion of the barley and oats will also be carried. The barometer within the last few hours has gone down, but we expect no serious rains. It is a very difficult task to give a correct report of the crops at this critical season. We hardly consider the wheat, however, of this county an average crop, though on some of the strong lands it perhaps never was better; but upon the gravels and chalky soils it is in many places a thin, uneven plant, and a good deal blighted in the ear. The barley is a very bulky crop, but much of it will be very coarse in the sample, being greatly laid with the heavy rains, and become green by a second growth; added to which, the clover is so very forward that it will take a long period to harvest it in proper order. The oats, almost without exception, perhaps never were a finer crop. The forwarder kind of peas are also well corned, though they had began to sprout and shed on the ground surprisingly ere the fine weather commenced; the later varieties have too much straw to be at all productive in corn. Beans, with few exceptions, are considered a good crop; winter tares but partially so. From the long continuance of wet weather the price of corn has been getting up, and there is reason to fear that a desperate effort will shortly be made by the foreign corn speculators to bring in that in bond without duty. The best friends of agriculture cannot but admit that the rapid decrease of duties in our present corn law scale greatly facilitates these almost gambling transactions; in addition to which, corn is withheld from the consumer till the price becomes burdensome—evils which might and ought to be remedied. Having promised your agricultural readers our views as to what kind of corn bill we consider would be most beneficial to the country at large, we will take occasion of the early assembling of parliament to submit it to the public, and which we offer as a sort of compromise between the fixed duty and graduated scale men—

SCALE OF DUTIES.

Average price per qr. s.	Proposed duty. s.	Present duty. s.	d.
70	6*	10	8
69	7	13	8
68	8	16	8
67	9	18	8
66	10	20	8
65	11	21	8
64	12	22	8
63	13	23	8
62	14	24	8
61	15	25	8
60	16	26	8
59	17	27	8
58	18	28	8
57	19	29	8
56	20	30	8

And under 56s. the duty to advance 1s. 6d. per qr. for every shilling; the price may fall below that sum.

The great objects to be sought by a corn law is to induce speculators to bring in so much as may be wanted in addition to our own growth when the price is remunerating to the grower, and before it shall have become burdensome to the consumer. In this object it must be admitted we have been hitherto defeated. We state, upon the authority of an influential corn merchant of this county, that there have been about eleven millions of qrs. of wheat imported into this kingdom under the present law, which has paid an average duty of 5s. 9d. per qr.; whereas, if the scale submitted above (in juxta-position with the present one) had been adopted, the government would have received an acquisition of upwards of five millions sterling, without the least additional cost to the consumer; the difference having gone either into the pocket of the speculator or foreign grower. In the proposed scale of duties it is calculated that 7s. per bushel is the lowest price at which (with the burdens of this country) corn can be profitably grown, even in good seasons; and that when wheat varies from 60s. to 70s. per quarter, duties should be such as to give facilities for importation, and as the duty would fall off so gradually the hope of profit by withholding the supply would be pretty well taken away. It would still be desirable to strike out the great sea-port towns of the kingdom from the corn returns, leaving our internal merchants and millers to make them. Under those circumstances the probable effect of such a measure would be, that in abundant seasons very little foreign corn would come to hand, and that little paying heavy duties. In average seasons duties would vary from 8s. to 16s., while under deficient harvests they would go down so low as to render any orders in council unnecessary, and still not be entirely inefficient. Our Chandos friends will think our concessions too great, the free traders not great enough; let both pause and try to devise a better measure for the country at large before they reject it.—Aug. 20.

NORTH-EAST OF SCOTLAND.

A very great quantity of rain has fallen in this district of the country since the middle of last month; but if it had come a month or three weeks earlier, it would have been of much more benefit to the crop. Oats are almost the only grain crop in this district; and they were too far advanced before the rain came, to be made a luxuriant crop by it. At the present state of the crop, warmth and sunshine are what we are most in want of. And we are happy to say, that we have had eight or ten days of excellent weather lately; and crops of all kinds have been rapidly advancing. The corn is now beginning to change the colour, and with favourable weather, the harvest would be commenced in about three weeks from this date. We say this with reference to oats, for the small patches of bere in the district will be reaped in about ten days or little more; and if the harvest be begun about the time which we have now indicated, it will just be about the same time that it was last year. But between the crop which was on the ground last year at this date, and that of the present season, there is no comparison; the latter being inferior in all respects. The corn came into ear about the middle of last month; and at that time the crop presented a very poor appearance indeed. The corn crop has not been so short at the time the ear was formed, since the memorable summer of 1826. The abundance of moisture which we have latterly had, has however made an immense improvement on the crop. We fear, however, that notwithstanding this improvement, it cannot be said that the present crop will be an average one. *The ear is small*—the necessary consequence of its having been formed when the plant was kept in a dwarfish state by the severe and long-continued drought in the months of May and June, and beginning of July; and the stalk also, unless on the best soils, is feeble. A great extent of very inferior land has, by excellent management and abundance of bone and other manure, been made to produce good and even luxuriant crops for a number of years past. But such lands being naturally poor, and having but a scanty covering of vegetable mould, resting generally on an unfavourable subsoil, are unable—however well *in heart*—to resist the effects of unfavourable weather when continued for any length of time. It is on land of this description, therefore, that the deficiency of the crop this season is most conspicuous. There will be a great deal of *greens* in harvest this season from the undergrowth, which has been brought up by the late rains. The hay crop in this district, as everywhere else throughout Scotland, may be said to have been a failure; and the weather also after it was cut proved unfavourable for making it. It was with much difficulty that the patches of grass reserved for seed could be got secured in any kind of tolerable condition; and some of it, having stood for three weeks of rainy weather in the shock, must have suffered considerable damage. Rye-grass seed may be expected to bring a high price next season. Pasture grass has never been abundant this summer. Those who bought cattle in spring for summer grazing will be but poorly remunerated for their keep. The turnips—a crop of very great importance to the farmer, and a crop of which a great breadth is sown in this district—are at present doing well; the second hoeing is now nearly completed, and with favourable weather an abundant crop may be expected. The present appearance of the potatoes indicates a good crop. Only a few fields are to be seen in this district, in which any failure has taken place this season.—Aug. 21.

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* If at the end of six weeks wheat shall exceed 70s. per qr. the duty to come down to the minimum of 4s. per qr. until the price shall fall to 70s., when it shall again be subject to the above scale of duties.

CALENDAR OF HORTICULTURE FOR SEPTEMBER.

Culinary Department.—One of the first operations is the preparation of *Mushroom beds*, in the open ground. Abercrombie recommended a dry spot in the melon department; for, at the best, much litter will be occasioned: the bed may rest entirely on the surface, or within a space excavated to the depth of six or eight inches. The bed itself should be made of the best stable manure, long and short, well forked together, and be permitted to remain for at least a fortnight, to mellow and become temperate in heat: it may then be spawned. Spawn bricks are now procurable at every nursery; but formerly, as Abercrombie tells us, it was obtained from old cucumber and melon beds. Spawn, he says, he often found in the farmers' dung-heaps, also in horse-mill tracks, or in stable-yards where dung had lain for a considerable time. "It is commonly found in lumps of dry rotten dung; it is a white fibrous substance, running and spreading itself in such lumps, appearing like white filaments, and emitting the precise odour of the true mushroom."

Plant *Lettuces* in two ways, from the seedling plants of August: *first*, dig a plot of rich light ground, and set in rows, as the digging proceeds, so as never to trample the moved earth; let the rows be a foot apart, and the plants stand four inches asunder. *Second.* If the land be heavy, and the situation cold, lay three inches of good and rather old manure upon the flat surface; then mark the plot in lines fourteen inches apart: dig out a trench of that breadth, like a celery trench, turning the earth on another of the fourteen-inch spaces by its side, upon the manure; raise it in a ridge, and make the earth fine and light: on this ridge plant the stoutest and best grown lettuces, six inches asunder. The trench acts as a drain, and we are assured, by one who never could keep a lettuce throughout the winter, that he thus succeeded, last year, perfectly. In dry sandy land, and in a warm spot, this trouble may be spared.

Some seeds also can be sown in a cool frame, and be kept under glass all winter.

The *Cauliflower* plants sown in May and pricked out in July, will begin to show their heads. In dry weather make the earth around the stem in the form of a basin, in which water may be poured; also, now and then, manure-water: this is a plant which ought to be tried with a very weak solution (half an ounce to a gallon of water) of nitrate of soda.

Cabbage plants, of the August-sown seed, may be pricked out into nursery rows, twice, i. e. early in the month, and again in the third week. Thin the seed-beds regularly, leaving the plants six inches asunder; then make the ground about them clean and even. These plants may serve a good turn in March, as, in the event of a severe winter, the small space they occupy can be covered with a mat or two.

The same operations are suitable to the *Coleworts* intended to supply open greens.

Celery, earth up; and *Endive*—tie some plants for blanching. As to the former, the object of earthing is to whiten the stalks; but people err by their injudicious landings-up: the plants should be suffered to grow freely, and be earthed moderately, and occasionally (always rather below than above the heart-shoots), during the entire growing season.

Spinach.—The plants raised by sowings of last month, and those of July, should be thinned to regular distances of three inches. Clear away the weeds, then hoe and rake the spaces: in another and future regulation, half the plants may be used for the table, leaving those which remain, six inches apart.

Turnips.—Hoe the last sown plots during dry weather. It is highly advantageous to adopt the drill system, because by it the distances, one way, are determined, and it will only be required to thin the rows so that the plants remain eight or nine inches distant.

Young Onions, for winter and spring use, must be kept clean. *Bulbing Onions* are ripe, and should be raised, and dried in an airy exposed shed; then tied up in ropes.

Sow *Salads* again, and also some seed in frames.

This is the month to render the garden a picture of neatness and order. If neglected, weeds will abound, and many of them will seed abundantly, as, for instance, groundsell and sow-thistle; but if every weed be exterminated, the surface roughly yet evenly digged, and other unoccupied spaces laid up in ridges, the kitchen garden will assume that sober appearance which renders it, perhaps, more agreeable than does the luxuriant verdure of the growing season.

Fruit Department. — *Wall Trees.* — *Stone-fruits.*—Let every well placed shoot be trained in its place, and avoid crowding. The fruit will be ripening fast, if the weather be warm; but to obtain colour it will be needful to remove a few leaves, so as to expose a portion of the surface.

Plums are ripe; and if wasps appear in abundance, the *Greengages* and *Orleans* become a prey to them. Bottles of treacle and water should be suspended among the branches; but above all, the nests should be destroyed—a very effectual way to do which is to have two or three buckets of water taken to the spot, late at night; two persons are required, one to hold a light, while another either pours a stream of water into the hole leading to the nest, if its direction be sloping downwards, or (if otherwise) digs a hole which will admit the water. When once the nest is deluged, the man chops the ground with a spade, till the whole is reduced to a mass of mud. We have known the work of complete destruction thus effected in a few minutes, without risk to the operator. Hitherto (Aug. 18) we have seen no wasps, but warmth will soon bring them into action, if the wet season have not destroyed them.

Vines afford little promise; for, if the fruit be paralyzed by cold gloomy weather in July, the berries rarely enlarge. All that can now be effected is to remove every useless shoot, to expose the clusters to sun, and to cut back the last made shoots. Blue-bottle flies eat ripe grapes: phials and sweetened fluid entice many, but a solution of arsenic in water, sweetened, and placed very shallow in saucers or small plates, which may easily be suspended out of reach, will destroy flies by thousands.

Figs will be ripe by the beginning of the month, but we remark that the greater number are affected by the late ungenial weather, and yellow off instead of maturing. If the process of disfruiting, mentioned in our last (p. 156), have been omitted, not a day should be lost to divest the young wood of those "sterilizing encumbrances."

Strawberry Beds and *Rows* may be prepared in perfection after the 15th; the chief care being to provide ample depth (eighteen to twenty inches) of sound loamy soil, trenched and pulverised. The plants should be arranged in rows, the plants and rows from fifteen to twenty-four inches asunder. Stout, well rooted offsets of the old pine, Myatt's pine, Keen's seedling, Dounton, and Elton, are to be preferred: Myatt's is, however, directed to be set very close, in richly-manured soil. His new British Queen is extravagantly dear, otherwise it is highly desirable.

FLOWER DEPARTMENT.—Transplant *Carnation* layers, and *Pink* pipings that have formed good roots. A little powdered chalk and road-sand mixed with the soil will be of service. *Auriculas* lately potted should be preserved from drenching rain: the plant is hardy as to cold, but miffy with redundant moisture.

Dig and prepare borders for the reception of herbaceous plants, which may be multiplied by division of the roots.

Dahlias are in their full beauty; and we have again to repeat the amazing effects of nitrate of soda. The plants we alluded to in our last are the admiration of prime judges, who are astonished at their strength, richness of deep green foliage, and finely tinted blooms.

Box Edgings may be made, blanks filled up, and old box trimmed with sheep-shears. Gravel walks should be weeded and rolled frequently; lawns rolled, mown, and trimmed. Every vacant spot should be rough-digged, and the surface among shrubs and flowers made quite clean, and left a little rough with the tool: for a level, almost glazed surface is out of keeping.

Greenhouse Plants ought to be removed to winter quarters in detail; all the *Scarlet Gerania* raised carefully from the open ground, and planted in small pots of loam and heath-mould.

Cuttings of the prime show Pelargonia, which have taken root, and are growing, ought to be planted in small sixties of the same soil, and be shaded in frames till they grow; then each strong plant should be pinched or cut back to three buds.

The *Stove* must have the flue in good acting order. Air ought to be given freely, water moderately, and the temperature maintained at about 55°.

The *Pine Stove* and *Pine Pits* are active now; the plants, if healthy, and in proper loam, thriving fast. Rapidity of unchecked growth is the *sine quâ non* with "successions." But the full-grown plants in the fruiting-house should be kept cool, and suffered to dry off, merely sprinkling (dewing) the leaves, preparatory to the application of stimuli, which will be hereafter duly noticed.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ASHBOURNE FAIR, August 16th.—This fair was well supplied with cattle, which went off briskly and at high prices. A great many lambs were penned (this being the greatest fair in the year for them) and were much in demand, and sold well. The horse fair was not so large as on former occasions, but those that were good and useful readily met with customers, at better prices than usual. Beef and Mutton may be quoted at from 6½d. to 7d. per lb.

HORNCASTLE HORSE FAIR.—This fair, the largest in the kingdom, commenced a day or two earlier than usual; some foreign dealers arrived on Friday the 6th inst., but very little business was transacted until the following Tuesday or Wednesday, when an influx of buyers made their appearance; horses up to this time appeared scarce, but first-rate. On Thursday and Friday horses showed more plentifully, and found ready purchasers at high prices. On Saturday the inns and lodgings were very full, and many exchanges took place. Mr. Whitlam sold two horses for 500 guineas. Mr. Elmore bought the little steeple chase mare Flora for 100 guineas. Captain Skipworth sold four for 400 guineas. A great number of horses fetched from 100 to 200 guineas each. We have more buyers from Russia, Germany, Prussia, and principally from France, than we have noticed for many years, who are buying extensively.—*Lincoln Gazette.*

At OSWESTRY FAIR the supply of sheep was good, which were readily sold at good prices, viz.—6d. per lb. for wedders, and 5d. to 5½d. for ewes. Good store ewes were in good demand. Cattle—the show of which was to a fair extent with the exception of fat ones, which was but small. Good beef from 6d. to 6½d.; inferior according to quality. Cows and calves were in demand, and fetched high prices; all other useful stock sold equally well. Horses: the show was large, but of most wretched description, which were taken away unsold. Pigs were bought cautiously, lest infected with the prevalent disease; but healthy and fresh ones find customers. The importations of Welsh and Irish pigs into Liverpool have, during many weeks, scarcely been more than one-half the usual number.

MELROSE LAMB FAIR. — This great annual lamb fair was held on Thursday, the 12th current, on the base of the Eildon-hills. The number of lambs of almost every description was much greater than last year, about 80,000 having appeared on the ground. Although there was a good attendance of purchasers, the unusual number of lambs brought forward threw a damp upon the aspect of the market from the very commencement. Even the top lots of half-bred lambs were bought upon more easy terms than at St. Boswell's, running from 15s. to 18s.; and secondary lots, or such as had been draughted from those sent to St. Boswell's and other markets, were selling according to quality at from 10s. to 14s. each. Three-parts bred, and full bred do., commanded fully higher prices, the former having been sold at from 15s. to 20s., and the latter from 16s. to 21s. per head. Cheviot top wether lambs were also less sought after than last year, still a very great number was bought by feeders of fat stock from the county of Fife, which will be taken to that quarter, and wintered and fed off the following season. Current prices of Cheviot top wether lambs ran from 9s. to 10s.; do. sesecond wether lambs from 6s. to 8s. Second ewe lambs, if any way equal, sold at 7s., 8s. 9s., and 10s. each. Mr. John Ramage, commission agent, near Cupar, Fife, bought up, previous to this market, nearly 3,000 half-bred and Cheviot lambs, all of which were from the very best stocks—namely, Woodheads, Coomslie, Hawkness, Hawkburn, (Newhall and Crossleehill), Moorfoot, and House-o'-Muir, Whiteside, &c., &c. These lots of lambs are all bought for gentlemen in the county of Fife and neighbourhood. Part of the lambs were left over unsold at this fair. But, taking the great number into account that was brought forward, it was anything but a bad market. The number of cattle was so very limited we forbear taking any notice of them.

LOCKERBY LAMB FAIR.—This important annual market was held on the usual show ground on Friday. Apart from sales made on the evening of the preceding day, business commenced early in the morning, and continued passing brisk till near the hour of noon. A lull, however, intervened, and for a time buyers talked of lessened prices at Melrose, and the altered state of the wool market in Yorkshire during the previous few days. Comparatively few dealers were present from England, but welcome substitutes appeared from Wigtownshire and Stewartry, who competed so keenly for the best lots of half-breds and Cheviots, that Annandale positively owes Galloway a day in harvest. Mr. Wright, Bengall, who again topped the market for crosses, sold early his best stock at the enviable figure of 23s. per head. This of course is a high price for a bleater only a few months old, but they were dropped so early that some of them weighed 120lbs. The same breeder had six scores in all, and even his seconds commanded readily a pound, or a pound and sixpence per head. Not a few of the bleaters looked the picture of hogs rather than of followers newly separated from their dams; and although prices fell in the evening (in a few cases to the extent of 2s. 6d. from the morning's askings), Lockerby-hill, taken as a whole, was at once a selling and a remunerating market. Some of the top lots exceeded by 6d. per head the prices current last year, and were actually better worth the money. After a careful comparison of notes, the subjoined statement, in the opinion of the best judges on the ground, will be found very near the truth:—17,000 half-breds, average price 15s. 6d. per head; 21,000 Cheviots, do. 9s. 6d. each; with 5,000 black faced, do. 7s. 3d.; in all 43,000 lambs. Descending to particulars, half-breds ranged from 13s. to 12s. each; Cheviots from 10s. 6d. to 7s.; black-faced from 8s. 9d. to 5s.; and brockles from 7s. to 10s. The few specimens of Leicesters shown brought generally 30s. each. Several lots of half-breds brought a guinea, a pound, and a pound and sixpence; but 14s., 15s., 16s. and 17s. formed the price staple, keeping in view the general run of the market. A large lot of Cheviot ewe lambs, bred by Mr. Bell, Whitecastles, realized the high price of 13s. 6d. each from their marked superiority for breeding purposes. The Messrs. Armstrong, brothers, concentrated a stock of 6,000, purchased privately, and had re-sold more than three-fourths of the whole by four o'clock. Samuel M'Call, Esq., of Caitloch, had a thousand head of lambs of his own breeding—the greatest amount of stock shown by any one grazier on the Hill, and only the half of his annual castings in the same department. The whole of these he sold at a comparatively early hour. Black-faced ewe lambs were in great demand, and sold proportionally higher than wedders of the same class. In not a few cases the figures were 9s. and 9s. 6d., but we heard of none that exceeded or even reached the top price at Lanark. Comparatively little business was done in wool, but the dealers made tenders that may be accepted hereafter on something like the following terms: Half-bred hog wool, 28s.; Cheviot, white, 26s.; laid, 16s.; and black-faced, laid, 8s. 6d. per stone of 24lbs. In one instance a large parcel of superior laid Cheviot brought 17s., but 16s. of course was much nearer the mark in the majority of cases. "Tarry woo," formerly so much decried, is again getting into favour, and is as marketable an article as any other sort.——LOCKERBY, August 14.—The number of lambs remaining unsold yesterday ranged between five and seven thousand. The greater proportion of these were in the hands of the dealers, as most of the farmers sold in the evening at lower prices than were current during the day. Several lots were sold to-day for less money than could have been obtained yesterday. From 1s. 6d. to 2s. more per head could have been got with ease for lambs on the forenoon of Friday than became common at night, and not a few lots were in this way ultimately brought to a bad market.—*Dumfries Courier*.

LINCOLN NEW FAIR.—On Friday afternoon a public meeting was held in the Guildhall of the city of Lincoln, being conveued at the request of the Town Council, to consider the propriety of establishing an additional autumnal market or fair. Charles Seely, Esq., mayor, presided, and Messrs. Mason, town clerk. East, Fisher, R. Dawber, Blyth, and Newton, attended on the part of the Lincoln municipality. Among the agriculturists present were the Hon. Alexander Leslie Melville, R. A. Christopher, Esq., M.P.; Messrs. Stephenson, of Skellingthorpe; Coupland, of Canwick; Gretham, Tonge, of Branston; Cooling, of Burton; Wilson, of Tillbridge; Dudding, of Panton; Morris, of Dunholme; Jephson, of Heighington; E. Clark, of Canwick; C. Clarke, of Nettleham; Fullard, Marshall, E. Rudgard, &c. After some conversation, the 25th of October was decided on as the most appropriate day for the new market or fair, to be held for the sale of horses, cattle, and sheep; if falling on a Sunday, to be held the next day.

ST. COLUMB FARMERS' CLUB.—The meeting for August was held on Monday, and the subject for the evening's discussion, "the harvesting of crops," was introduced by Mr. H. Drew, vice-presideot, in an interesting address. After the discussion, the following resolutions were entered into:—That it is the opinion of this meeting, that early culture improves both the quality of the straw and the grain, and that wheat should be cut seven or ten days before it becomes perfectly ripe, and should be shocked on the field with ten sheaves in a shock; the last sheaf should be used as a hat, and when the grain is perfected, to be put into arish mows till carried. That barley should also be cut, before being perfectly ripe: that it should have a long flooring, and that it should be put into arish mows when the grain is matured. That oats should be floored longer than barley, and may be taken up with a light dew on them without danger or injury to the grain.

We regret to learn that a new distemper has broken out amongst cattle with fifty times the virulence of that by which they were lately attacked, against which it is said that there is no remedy. Many graziers and dairymen have suffered to an awful extent in the vicinity of Dublin, and in the direction of Carlow and Drogheda. It commences with a cough, which generally ends in the death of the animal in about ten days. The complaint is an inflammatory one, and principally affects the lungs. It is supposed to proceed from cold which the cattle got during the last epidemic distemper. In fact, as yet people are at a loss to know what to attribute it to, or what to prescribe as a remedy.—*Ballyshannon Herald*.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF AUGUST.

The old saying still exists, *that nothing human is perfect.* Notwithstanding this conclusion, which the experience of ages has arrived at, the system of protection which has always been extended to the industry of mankind in all civilized states, if not entirely perfect, comes as nearly to perfection as the mind of man can well conceive. In the United Kingdom the truth of this assertion has been well established throughout many generations; and the consequence has been her elevation to her present height in human prosperity, happiness, and real independence. She still contains within herself, however, the means of far greater progress in civilization than she has yet arrived at; but they can only be rendered effective by maintaining in their full vigour, and by amending those amongst them which may have suffered by decay, all the public institutions of her inhabitants. In all well ordered communities, to support with food in the best manner the people, has been the chief object of all philanthropists; and the cultivation of the fields at home, is the only certain mode for effectually obtaining this universally desired benefit. In the United Kingdom, the protection which the corn laws hold out to the wages of labour, and to the cultivation of the soil, has already been attended by numerous advantages to all classes existing in this highly favoured empire. These laws, as we have so repeatedly mentioned in this article on the state and prospects of agriculture, have reached perfection as nearly as possible, in as far as the principles on which they are founded are concerned; but in their workings there are some weak points in them, which demand the serious attention of the British legislature. That due encouragement should be afforded to the growth of grain at home, admits not of any doubt; indeed, this fact has only to be mentioned, to be universally admitted by all whose private interests do not lead them into selfish and visionary notions on this most important subject. By the most authentic information which can be drawn from public documents, nearly fifty millions of acres of land are at present in a state of cultivation, and twenty millions more in a state of nature, a great part of which however may, by capital and labour, be rendered useful to the people. Three thousand millions sterling, at the present value of money, are much less than is the value of the property now actually embarked in agricultural pursuits and improvements. The national debt and public engagements amount to nearly one thousand millions; and in manufactures, fishing, mining, and all the other departments of trade and commerce, another million sterling is probably engaged—the income drawn from the whole affording productive employment and excellent wages to the people, so long as that income is expended within the British Empire and her colonies. It is perfectly obvious from this statement, that agriculture, even in a pecuniary point of view, is more valuable than all the other interests in the empire when added together; and that this interest, of so much magnitude and importance, should be protected at all seasons and under all circumstances is obviously necessary to the nation's real wealth. On the prosperity of agriculture, depends the prosperity of all classes in the community; for without the spur and patronage which agriculture, under favourable circumstances, can give to industry in all its branches, productive labour must be circumscribed, and the wages paid for it proportionably diminished. In the present critical state of commerce and manufactures in Great Britain, it is therefore particularly necessary that every effort should be made to render agricultural pursuits profitable; and for this purpose, it is not possible to adopt any better plan than to maintain in their greatest vigour, the principles of the present corn laws, and at the same time to amend the few imperfections which exist in their practice. To guard with the utmost jealousy property, labour, and science embarked in the production of food for the people, against the importation of agricultural produce of the same description grown in foreign nations, is at the present moment the bounden duty of the British legislature; for on it mainly depends the restoration of commercial prosperity. To bring into a proper system of cultivation the vast agricultural resources which the United Kingdom possesses, food may eventually be raised in the greatest abundance for the support of three times the present population; and the capital of the country, which is now sometimes annually paid away to foreign land proprietors for supplies of foreign food, will remain in active circulation amongst the people, will be employed in public and private improvements, will increase the intrinsic value of labour, and consequently of wages; and will be the means of furnishing living incomes to all who feel disposed to follow out the pursuits of industry. For the promotion of these vast advantages, the corn laws are admirably adapted. They protect the property of the agriculturist so long as the great markets of consumption are sufficiently supplied with grain; and, when these supplies are less than the demand actually requires, foreign grain may be imported to make good the deficiency in our own growth at merely nominal duties. There is every probability that during the present corn season, the beneficial system of the corn laws will be very perfectly illustrated, and that the strongest proofs will be brought forward of the many advantages which a graduated scale of duties possesses over a fixed duty, as lately proposed by her Majesty's ministers; for were these alterations effected, foreign grain would be sent into all our markets of consumption at all times and under all circumstances, and the utter ruin of our home grain producers would be the inevitable consequence. But the agricultural interest would feel the change far less than any other interest in the British community would do. Prices of grain might, and probably would, decline fifty per cent. under their present quotations, and the farmers might be deprived of a part of the capital now embarked in their leases; this would be the extent of the loss which the adoption of a fixed duty would entail on the cultivators of the soil at home. The landowners might be deprived of a portion of their present rents, and much of their property might be thrown out of tillage; still, however, the fields would remain to them, and would produce in abundance all the necessaries and many of the luxuries of life for themselves, for their farmers, and their agricultural labourers. During even the first season of a free importation of foreign grain, the precious metals would be nearly entirely remitted to those countries from which this grain was received in payment for it, and money would thus be rendered scarce and dear. Those who remember the fatal consequences which the passing of the metallic currency bill occasioned to the agricultural, manufacturing, trading, and commercial classes in the United Kingdom, betwixt the years 1819 and 1827, alone can conceive the injurious effects to all these interests which another panic in the money market must inevitably occasion. It would be attended by the destruction of *money confidence* betwixt man and man. It would immediately put a stop to all undertakings of enterprize, or at all events very materially limit them; and on the wages of labour it would act with double violence. Productive employment would become scarce, and consequently valuable, and the wages to be paid for it would decline in a much greater degree than the value of the necessaries of life had previously done. To any farther improvements in agriculture, and to any farther attempt at the cultivation of the many millions of acres of waste lands now lying useless in almost every quarter of the United Kingdom, a fixed duty on the importation of foreign grain for home consumption, would place insuperable obstacles, and then indeed we would have a really surplus population. It may appear to be a paradox to assert that, *to pay apparently more money for British grain than foreign grain can be imported at, is the true road to cheapness*; but, nevertheless, this is the real fact: for the money paid to British producers of grain remains in active circulation within the empire. The Anti-corn-law lecturers *harp* much on the landholders and farmers obtaining more money for their produce than it is intrinsically worth, but this assertion the experience of facts most completely contradicts; for we find no farmer throughout the three kingdoms who has, during the last century at all events, arrived at more than a moderate independence. Not one of them has obtained the rank of Peer or Baronet, nor has one of them gained the honourable distinction of being rated even as an £. s. d. The money which they yearly receive for their crops, is expended in manufactured goods, in agricultural labour, and improvements; and thus, wages and employment are increased to all the industrious classes, in proportion to the prosperity of the agricultural interest. When the productive labour at home is greater than the home labourers can perform, then indeed it may become a question whether it may not be good policy to employ Polish serfs and German boors in raising grain for the consumption of the British people; but it is worse than absurdity itself, to give employment to foreigners at the expense of our own agricultural labourers, to throw the latter out of employment, and to transport them to the colonies at the public expense, so long as they can be most productively and abundantly employed at home in farther agricultural improvements. That there still exists an almost boundless field at home for productive labour of this description, the sceptic himself has only to cast his eyes around him, and he will feel perfectly convinced of the error of his present sentiments. He will discover, on inspection, that there is not now one acre of land so perfectly cultivated within the empire, which is not capable of still increased improvement; and that there is scarcely one acre so entirely barren, which may not be rendered useful to humanity by capital, by industry, and by the progress of agricultural science: and the natural conclusion at which he will arrive must be, the conviction that the soil of the United Kingdom is perfectly capable of supporting, in independence and in comparative comfort, three times its present population. This is the only effectual method for rendering the people really contented with their condition in life. There is not one artisan nor one operative in the empire, who knows not that his wages are regulated, on the whole, by the expenses of living; and that were they reduced only by one-third of their present rates, his income would fall at least one half; for his daily means of employment would decay, as the means of the agriculturist to pay became more limited. That the decrease in the consumption of manufactured goods at home which a virtually free corn trade would occasion, cannot be made good by any increase in the exportation of goods to those states from which foreign supplies of grain may be received, has been rendered sufficiently evident by the experience which we have had during the last four years, of the ruinous consequences attending a large importation of foreign grain. In this cause alone has originated that drain of the precious metals, which during that period has reduced the stock of them to one-third of the quantity which a few years ago remained in the coffers of the Bank of England, and it has rendered money both scarce and dear. So far, however, from these importations of grain creating an additional demand for manufactured goods generally, the result has been completely the reverse; and to this cause alone can be attributed the alarming condition into which all the manufacturing labourers are so rapidly sinking, and the many sufferings to which, for a time at all events, they most probably will be exposed. Why the enlightened operative classes in Great Britain should be employed, like slaves, in manufacturing clothing for foreigners, in exchange for their food, is an enigma very difficult of solution; and yet this is the state to which they would be reduced, did the Legislature comply with the demand of the would-be British cotton lords. They would be placed in a situation worse than that of a gentleman's horse, for the latter is well supported, whether in health or in sickness; but when the artisan is unable to work, he is allowed to retire on his own resources, to walk into the union house, or to perish in the streets. Mutual labour is the only foundation of civilized society, and every community very naturally protects all articles produced within itself, against articles of the same description produced without that community. Strong causes indeed can alone justify any departure from this system, though, in every probability, in the United Kingdom during the next corn season, this general rule must be partly abandoned. The elements will render a considerable importation of foreign grain necessary, and the consequence must be as usual under similar circumstances—the abstraction of a proportionable value of the precious metals from the country, in payment for these importations. The existing distress in commerce and manufactures will be thus also considerably increased by this unfortunate state of things. This misfortune, however, as we are at present situated, no human wisdom could foresee, nor could any legislative enactments remedy. Since our last publication, the crops of all descriptions of grain have more or less received injury by the unpropitious state of the weather, it having been unusually cold and rainy till towards the close of August, when a material improvement very fortunately occurred in it; and should this favourable change continue until the harvest be gathered from the fields, the crop may yet be fully an average one in quantity, but wheat, in particular, will be deficient in quality; indeed, not one sample of superior quality has as yet appeared in the market for sale. There, very fortunately, still remains a considerable quantity of last year's growth in the farmers' yards, and this will be rendered valuable for mixing with the new wheats as they may be delivered into consumption; still, however, a large quantity of the best Dantzig wheats will also be requisite for the purposes of mixing, and a farther importation from the Baltic is consequently rendered necessary. As we have repeatedly had occasion to state, however, these excessive supplies of foreign grain are exceedingly injurious to the commercial and manufacturing interests. They are universally attended by the inconvenience of a scarcity of money; for a trade of barter with foreign nations, an exchange of goods for food, never yet occurred, and never can. Should the principles of our corn laws be once departed from, every class in the empire must be injured by the alteration, and the remedy of restoring them afterwards may come too late for the general good.

As is usually the case at this time of the year, the barley trade, since our last review of the state of the corn trade generally, has created very little observation; and, under the circumstances in which our fiscal regulations have placed the growers of this most important article of agricultural produce, speculative operations in it, during what are called weather markets, are impossible. It has so often been our duty to call the serious attention of our agricultural readers to the very arbitrary manner in which barley, when manufactured, is taxed, that it may appear to be only repetition when we again direct the public notice to this most interesting subject; but we are perfectly aware that prejudices cannot be removed until they be frequently exposed, and we shall not willingly, therefore, cease to place within the view of the people, the gross injustice towards the agricultural interest, which the heavy taxes imposed on malt and English-made spirits perpetrate. We have mentioned that weather markets affect, in a very slight degree indeed, the value of barley; and the reason for this fact is, that taxes restrict the consumption of barley to at least one-third of the quantity which the wants of the people require, and consequently the growth of it is proportionably restricted. In barley, therefore, at this season of the year, no speculations can be made on the prospects of the coming crop, because the stocks of the previous one are at this time reduced to the smallest quantity possible. This is a most serious injury done to the people in general; for in case of a bad barley harvest—of which at the present moment there is unfortunately but too much prospect—no quantity of the previous crop remains on hand, sufficiently large even partially to lighten the evils which a deficiency in the crop most naturally occasions. The farmers, under the existing system of taxation, have no inducement to increase the quantity of barley annually grown by them, because, under the existing circumstances of the trade, there is not the slightest chance of any increase occurring in the consumption. The farmers would cheerfully grow twelve millions of quarters for the brewers' consumption alone; but heavy malt duties, and absurd excise restrictions imposed on the maltsters, limit the consumption of barley by the licensed brewers to something less than four millions of quarters. In this channel alone, therefore, the farmers are deprived of a market for barley probably to the extent of six millions of quarters; and consequently they do not produce nearly so much as, under a more liberal and moderate system of taxation, it would undoubtedly be, not only for the interest of the community but likewise for the interest of themselves to do. Beer extracted from four millions of quarters of malt, as we have repeatedly stated, is undoubtedly but short allowance in the extreme, when divided amongst the population of the United Kingdom. Three times the quantity would but moderately supply the demand, was the value of beer only rendered moderate. This benefit, however, can only be the consequence of a material reduction in the duty now chargeable on barley when manufactured into malt. At a charge of one shilling a bushel, the consumption eventually would be tripled, and the revenue would be materially improved. The industrious classes of society would enjoy in moderation the use of their favourite beverage, and the profit arising from the additional growth of barley would much more than liquidate the additional expenses which the increased consumption of barley would occasion. But without even any consideration for the interests of the consumers of beer themselves, the want of a moderate stock of old barley at the present period, must be attended by very serious consequences to the best interests of the empire, should the weather, during the present harvest, in any material manner injure the quality of the coming barley crop. In the event of this calamity occurring, a large quantity of barley must be imported from abroad, and a serious drain on the stock of the precious metals, in payment for these importations, must be the certain consequence. These remittances to foreign nations of specie, added to those which must be made for wheat and for other descriptions of grain, will have great influence in reducing the quantum of labour which the people now obtain, and a proportionable reduction in wages must from necessity follow. To the heavy malt duty must this great misfortune be attributed, should any failure occur in the coming barley crop; because, as we have mentioned above, the malt tax, as it is at present levied, renders the consumption of barley by the public brewers over four millions of quarters, entirely impossible. The member of the Legislature, who some time ago proposed the total repeal of the malt duty, shewed his perfect knowledge of the real interests of the British empire; but at that time the treasury could not afford the annual loss of from four to five millions sterling; and certainly, at the present time, it is far less able to spare any such reduction from its annual resources. But good service may be done to the state, by proposing to Parliament a reduction in the present rates of the malt duty. By such a step, the amount of duty now paid into the exchequer by the manufacturers of malt would be increased, and good service would be proffered to the agricultural interest. The quantity consumed would annually be on the increase, and the barley farmers would no longer have any just cause to dread any disadvantage occurring to them from over production.

There surely must be good cause to alter a system of taxation by which a large crop of barley is not of any use to the consumer, and is a positive injury to the producer. Only a limited quantity can be consumed by the maltster so long as he pays extravagant duties, and so long as his talents, industry, and knowledge of the principles of his art are obstructed by absurd fiscal regulations, which are of no earthly use, unless for the payment of excise officers employed in this more than useless occupation. To reduce the malt tax, at all events must render us entirely independent of foreign supplies of barley, unless occasionally, when the crop is so materially injured by the elements, as to render it unfit for malting purposes; and under a liberal system of taxation, in many instances enough might even remain from one good crop, to make good the deficiency of a bad one. During the coming season, it is more than probable that the barley crop will be found to have suffered very considerably in quality, and malting barley consequently may be scarce and valuable; but should the crop be gathered in any thing like good condition, the distillers may supply themselves on moderate terms. This more than important department of British commerce, has been now for years labouring under many disadvantages, and the trade generally has not been in a favourable state. Several of the largest establishments indeed have ceased working, to save the loss of capital; for it is next to impossible for them to pay the heavy duties charged to them in England, and afterwards to compete with the foreign smugglers in our own markets of consumption. The illicitly imported spirits into England annually, if manufactured in England, would require at least half a million of quarters of grain in their manufacture; and thus not only is the British government defrauded annually of a large sum of duty, but the British distiller is also obliged to limit his operations, and often compelled to submit to much loss: whilst our agricultural producers of barley are likewise deprived of a valuable channel for the consumption of a considerable quantity of barley, in addition to that now used by the British and Irish distillers. The British distillery trade is likewise very materially injured by the useless restrictions which the excise regulations place on the operations of the rectifiers. Whilst foreign spirits, colonial spirits, and Irish and Scotch whiskey, are permitted into general consumption at any strength which may suit the interest of the spirit merchants, and the palates of their customers, rectified spirits cannot be sold unless they be at least seventeen under proof. Now, however great may be the science and talents of British rectifiers, it is difficult for them to compete with foreign spirits under such circumstances. That British brandy can be manufactured equal in flavour, and superior in quality, to the general descriptions of brandy imported from France, is a fact already well established; but at the same time it is utterly impossible for the rectifiers of British brandies in King-street, Snow Hill, for instance to meet fairly in the British market—in consequence of the useless restrictions under which they labour—the manufacturers of foreign spirits. If the Legislature would only consent to remove these restrictions, and to place the British on an equality in strength with the foreign rectifier, a large sum of money which is now annually remitted for foreign spirits would remain within the empire, and would be embarked in various operations at home, which give much productive employment to the British population, and would, in a material degree, suppress the trade of the smuggler—that great pest to British society. Drunkenness has its origin in this source, and from drunkenness springs the equally destructive vice of tee-totalism. The metamorphosis of John Barleycorn into malt, is certainly not more extraordinary than is the conversion of the drunkard into tee-totaler. His face undergoes a change from fiery red to squalid paleness: and his mind is proportionably altered with the body, by this distilling operation. He however has one advantage over Sir John Barleycorn; for he is able, and frequently does return to his former state in life, by *eating* instead of *drinking* spirits. The reduction of the duty chargeable in England on the manufacture of spirits, and an alteration in the excise regulations, which are so very detrimental to the British rectifier, must however eventually destroy the trade of the smuggler, by rendering it unprofitable; and the consequence must be the suppression of these two abominable crimes. Temperance will then be established on a solid foundation—the morality of the people will be very materially improved—the agricultural interest will have a demand for an additional quantity of grain—the revenue must eventually be considerably augmented; and the people in general will enjoy in moderation all the benefits which Providence extends to them. As the laws are at present, no encouragement is given to an extended cultivation of barley; although for the extent of land now in barley tillage, a large crop may eventually be gathered, though the quality cannot be so fine as it is in the average of years. For distiller's purposes, however, under the existing restrictions placed on this important branch of British manufactures, the supply during the coming season will probably be abundant; and as moderate prices may be the consequence of inferiority in quality, the distillers and the rectifiers have at all events the prospect of a favourable and profitable trade before them for some time to come. The brewers may not be so fortunate—for fine malting barley must be scarce, and consequently dear; and a foreign importation of the finest qualities, will in every probability be resorted to during the malting months. This is one of the evils entailed on the country by the limitation which the extravagantly high rates of malt duties place on the extension of barley cultivation. Let the cause only be removed, and the evil will cease to exist.

The rapid improvement which agriculture is undergoing in Ireland, under the beneficent auspices of the corn laws, has prevented any material alteration in the value of oats from occurring in any of the large markets of consumption in Great Britain; and the standard at which the average price by which Foreign importation of oats is regulated, is an obstacle to even weather markets producing any violent fluctuations in their prices. During the last month, therefore, this department of the corn trade has continued rather in a state of inanimation, and the advance in this article has certainly not exceeded from 2s. to 3s. per quarter. To Ireland we have been mainly indebted for this very fortunate steadiness in their value; for from that portion of the United Kingdom we have continued to receive supplies, which have placed the consumption much on an equality with the quantities brought forward for sale. This fact is perhaps one of the strongest arguments which can be adduced against any change being made in the principles of these laws. A fixed duty on the admission of Foreign oats for home consumption would, in a very material manner, interfere with the progress now making in the cultivation of the fields in that eminently agricultural island, and would go far in placing a strong limit to additional tillage being prosecuted there. We have, more than once, had occasion to draw the attention of our agricultural, shipping, and mercantile readers to this most important circumstance; for, in the event of any change in the corn law principles being permitted by the British Legislature, our markets would be filled with Foreign oats, at rates much lower than the farmers of Ireland can in future afford to furnish them. The freights from Bremen, Leer, Emden, and all the ports on the opposite coast of the Continent, to London, and to all the eastern markets in Great Britain, would be considerably lower than shipping could be engaged for them from Ireland, and even from many places in Scotland, and they would be almost entirely transported in Foreign ships, and under Foreign flags. This surely would be a change, to say the least of it, more than anti-British, and from it the oat consumers themselves would not receive one solitary benefit. The freights for transport would be taken away by the Foreign vessels in hard money, and the original cost would be remitted in the same expensive mode of payment. A great additional amount of bullion would thus be sacrificed to theory, which would never be drawn back by any increased quantity of manufactured goods exported. A barter trade cannot exist between the growers of Foreign grain and the British manufacturers—experience of the past has sufficiently established this fact. The weather, however, has been so varied during the last three months, and the oat crop in Ireland has been placed in such a certain degree of danger, that it is more than probable supplies of Foreign oats may be requisite before the conclusion of this year; should an importation become necessary, the difficulties of the people will be considerably augmented, but the corn laws, as they are, will prevent those supplies from being larger than the actual wants of the community may require. With a fixed duty, it would not be possible to limit the supplies to the actual consumption; and to grow oats, therefore, in Ireland, and in many oat districts in England and Scotland, would soon cease to be an object of much interest to our home farmers. Foreign land proprietors would receive the price, and Foreign agricultural labourers would enjoy the work and wages, for a considerable portion of the oat consumption throughout the United Kingdom. Ours would be an annual drain of specie, and an annual increase in the number of unemployed people. Such a system, in fact, as the proposed alteration in the present principles of the corn laws would create, might last for a few years; but its final result would be attended by many misfortunes, particularly to the industrious classes of society: and, consequently, we cannot conceive it possible that the Legislature can entertain any proposition which would change the duties levied on Foreign grain when entered for home consumption, from the present admirable system of a graduated scale to one of fixity, rendering the public charge on Foreign grain the same under all circumstances. At the present moment the oat crop in the fields is large, but the gathering of it will be late. Should the weather be fine until the conclusion of the harvest, the quantity will be large, but the quality will generally be of an inferior description. Under more favourable circumstances than the elements as yet have entitled us to expect, the oat crop at home may, after all, be little under the usual consumption in quantity; and the numerous disadvantages which universally attend Foreign supplies of grain may be averted from the commercial, manufacturing, and, indeed, from all the industrious classes within the British Empire. This, however, is only a possibility. The probability is, that a large supply from abroad will be necessary to make good the deficiency which may be found in our own growth. Since our last publication, we have received, by steam conveyance as usual, information from the different Continental corn markets in due course of post. The prospects here of a virtually free trade in grain had, at these dates, created a great sensation throughout all the corn districts in the North of Europe. The land-owners and the corn-holders were delighted at the prospect then opening to them of a speedy exchange of their grain with England for her bullion; and prices of wheat in particular had consequently undergone a very considerable advance. Large purchases had been made in the ports within and without the Baltic sea, for British account; and unless our duty be reduced to 1s. per quarter, all these later operations must be attended by pecuniary losses. Shipments to a large extent had been, and then were making to Great Britain; and should, by any fatality, the elements create any deficiency in the coming crop of wheat here, we have a certainty of receiving from the Continent very large supplies of foreign grain of every description; indeed, fully as large as they could by any possibility have been, had the corn laws been previously changed to a perfectly free importation at all times, under fixed rates of duty. Under the existing corn laws, when necessity required, we have universally received larger supplies of foreign grain than we had conveniently the means to pay for; and there is not one instance of the receipt of excessive supplies of foreign grain not being attended by much internal distress. The same consequences must attend the importations expected during the remainder of the season from abroad, should, unfortunately for this country, a deficient growth of grain here render the entry of them for home consumption, at nominal duties, absolutely necessary. As matters are, the purchases of wheat already made in the continental corn markets must, within two or three months, cause a ruinous drain on the stocks of the precious metals now in this country, and must render money scarce, and proportionably reduce the value of wages. This importation cannot add to the value of our export trade; a fact perfectly established by the experience which we have unfortunately had of a virtually free trade in grain with foreign nations during the last four or five years. We have during that period received, at nearly nominal duties, foreign grain to the value of very many millions sterling; and yet our exports of manufactured goods to the continent of Europe are annually declining in value, and distress consequently is annually increasing amongst our artizans and manufacturers, originating solely in the same cause.

From the Peninsula, the Black and the Mediterranean seas, the information latterly received here respecting the corn trade is much of the same description as the advices are from the north of Europe. Should our prices permit, and our stock of bullion be sufficiently large, they are all prepared to relieve our wants, and abundantly to supply us with grain. Their sympathy is unbounded, and every effort will be made by them to make money at our expence. The corn laws however, we trust, will protect the property and labour of our internal industry against the wild theories of all our modern political economists; for otherwise great injuries must, before long, fall on every class and on every interest within our prosperous and flourishing Empire.

The letters from New York and Boston are dated in the middle of last month. Throughout the whole of the American Union, large quantities of the last corn crop remained ready for shipment to those parts which were not so amply supplied with the produce of agriculture; and another most abundant crop was about to add largely to the stocks previously on hand. It has long been asserted in the United States, that if we would only receive the surplus of the grain and flour which can be produced there, it can be forwarded to the value of forty millions of dollars annually. During the succeeding twelve months, should unfortunately an opportunity arise from any alarm or from any actual deficiency in the produce of our own fields, our transatlantic brethren may in some measure prove the truth of their predictions; for they have certainly the power this season to forward to us immense quantities, and large will be the drain which they will make on our stocks of dollars in repayment for the favours which they are prepared and willing to bestow on us. It may however now be expected that the weather here will be propitious to clearing our own fields of a crop certainly most abundant in quantity, although, in a certain degree, it may be inferior in quality; and the one advantage may counterbalance the disadvantage of the other. Circumstances however will encourage large shipments to be made to our markets from America for some months to come; and our commercial difficulties will be thus increased by the circulating medium being rendered more restricted than it is even at present, in consequence of the money which must be remitted to America in payment for these supplies. This must however furnish us with another strong inducement even to increase the protection now given to agricultural improvements at home, and at all events to maintain the principles of the present system of corn laws, established as these laws are on such an admirable foundation; for without them every interest in the British Empire must gradually decay, and the fault of their alteration may be discovered when it may be too late to apply a remedy by again enacting these protective laws. This, we again repeat, must be the result of any material change being made in the principles of these laws. In their workings, undoubtedly, they are open to several important improvements, which it is to be hoped Parliament will, during this session, make in them; and thereby render them even more perfect than they are at present.

CURRENCY PER IMP. MEASURE.

AUGUST 23.

	Per Qr.			Per Qr.	
WHEAT, Essex and Kent, red ..	62	70	White 60	72	76
Irish 56	60	64	Do.	64	68
Old, red	74	76	Do. ..72	80	84
RYE, old	34	36	New....	36	38
BARLEY, Grinding 30 34 Malting	36	40	Chevalier	38	40
Irish....................	27	28	Bere ...	25	28
MALT, Suffolk and Norfolk	60	62	Brown..	50	54
Kingston and Ware	60	62	Chevalier	60	63
OATS, Yorksh. & Lincolnsh., feed	26	27	Potato ..	28	20
Youghall and Cork black	23	24	Cork, white	24	25
Dublin 21	22	24	Westport	24	25
Waterford, white 18	20	23	Black ..	23	24
Newry	25	26			
Galway 15	17	20			
Scotch feed	26	27	Potato ..	27	29
Clonmel	25	26	Limerick23	25	27
Londonderry	23	24	Sligo ..	23	24
BEANS, Tick, new.............	38	42	Old	42	48
PEAS, Grey....................	36	38	Maple..	36	38
White	38	42	Boilers .	40	44

SEED, Rape......	36*l.*	40*l.*	Irish..	32*l.*	34*l.*	per last.
Linseed........	48	56				
English Red Clover, fine,	60	70				per cwt.
White	56	64				
Mustard, White	16	—	brown	18	19	per bush.
Tares, old	36	40				
FLOUR, Town-made	65	—	Suffolk	—	56	pr sk. of 280 lbs.
Stockton and Norfolk,				—	56	

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		66	72			
Hamburg		60	62	64		
Rostock		64	66			
BARLEY		22	25			
OATS, Brew..................	19	22	24	Feed ...	14	16
BEANS	28	30	32			
PEAS........................		27	30			
FLOUR, American, per brl......		39	—	Baltic ..	38	—

IMPERIAL AVERAGES.

Week ending	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
July 9th ..	64	3	31	9	22	2	33	5	38	3	42	4
16th ..	64	11	32	6	22	4	35	2	39	5	44	8
23rd ..	66	3	32	9	22	9	35	5	39	6	42	4
30th ..	68	3	33	11	23	1	35	7	40	3	44	1
Aug. 6th ..	70	5	34	6	23	9	35	11	41	5	44	5
13th ..	72	5	35	11	23	6	36	3	42	1	43	1
Aggregate Average of the six weeks which regulates the duty........	67	0	33	7	22	11	35	3	40	2	43	6
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	18	8	12	4	13	9	16	9	9	6	5	0
Do. on grain from British possessions out of Europe............	5	0	2	6	2	0	1	6	0	6	0	6

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, August 20th, 1841.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, August 21st, 1840.	s.	d.
WHEAT	72	5	**WHEAT**	72	7
BARLEY	35	11	**BARLEY**	33	4
OATS	23	6	**OATS**	30	6
RYE	36	3	**RYE**	38	11
BEANS	42	1	**BEANS**	47	0
PEAS	43	1	**PEAS**	43	7

PRICES OF SEEDS.

AUGUST 23.

There was not much doing in the Seed market. Cloverseed was held fully as high as on this day se'nnight, but the actual sales were unimportant. Canary met with little attention; its value remained nominally unaltered. In prices of Rape, Carraway, &c., we have no change to notice.

Linseed, English, sowing	54	59					
Baltic	—	—	crushing	48	54		per qr.
Mediter. & Odessa	50	54					
Hempseed, small........	40	45	large ..	48	50		
Coriander..............	10	16	old....	16	18		per cwt.
Mustard, brown, new ..	12	16	white..	11	13		pr. bush.
Trefoil	16	28					
Rapeseed, English new..	36*l.*	40*l.*					
Rye Grass, English......	30	42	Scotch	18	40		
Tares, winter	—	—	Spring	—	—		
Large, foreign....	—	—					
Clover, English, red	—	—	white	—	—		per cwt.
Flemish..........	—	—	do..	—	—		nominal.
New Hamburgh ..	—	—	do..	—	—		
Old do.	—	—	do..	—	—		
French	—	—	do..	—	—		
Canary, new............	110	120					
Carraway, old	50	54	new	47	48	50	

PRICES OF HOPS.

BOROUGH, August 23.

In consequence of the fine weather for the new crop, the market is dull, though a moderate business is doing for consumption. The duty has risen since this day week from 145,000*l*. to 150,000*l*. to 160,000*l*., and Worcester is estimated at 18,000*l*. For pockets of the growth of 1839 and 40, there has been some demand, owing to their scarcity, but lower prices have been accepted from the circumstance of more favourable accounts having been received from the plantations.

	East Kent.		Mid. Kent.		Weald of Kent.		Sussex.		Farnham.
	s.	s.	s.	s.	s.	s.	s.	s.	s.
Bags, 1836	45 to	65	45 to	65	45 to	56	— to	—	—
Pocks. 1836	45 ..	75	45 ..	75	45 ..	65	45 ..	63	—
Bags 1837	none		none		none		none		—
Pocks. 1837	—		—		—		—		—
Bags 1838	80 ..	105	80 ..	100	75 ..	85	—		—
Pocks. 1838	85 ..	105	85 ..	105	80 ..	100	—		—
Bags 1839	110 ..	150	95 ..	116	—		—		—
Pocks. 1839	140 ..	180	100 ..	126	90 ..	115	90 ..	110	240, 300
Bags 1840	140 ..	300	120 ..	150	—		—		—
Pocks. 1840	140 ..	320	120 ..	160	105 ..	126	105 ..	135	290, 355 to 450

WORCESTER, August 21.—There is very little alteration in our market this week, but in consequence of the favourable change in the weather the duty has rallied again to 17,000*l*., at which it has been backed to-day by several in the trade.

MAIDSTONE.—The weather of the past week has still continued very unfavourable to the bines, most of which are still reluctant to shoot out their burrs into hop. There appears to be much inequality, not only in different grounds, but even amongst the bines in the same grounds. We have seen a branch of hops, some of which were two inches long, from the ground of Mr. Matthews, of Farleigh, and other grounds may be seen where in several acres it is difficult to find a hop. The mould is rather on the increase. Yesterday was a fine day, considerably warmer than the previous ones. The night also appeared more genial, and as the moon changed last night at half-past nine o'clock, a "run" of better weather is anticipated.

WOOL MARKETS.

BRITISH.

Aug. 23.

	s.	d.		s.	d.
Down Teggs	1	0	to	1	1
Half-bred Hogs	1	0		1	1
Ewes and Wethers	0	9½		0	10½
Flannel do.	0	9		1	2
Blanket Wool	0	5		0	8½
Skin, Combing	0	11		1	1

LIVERPOOL, August 21.

Scotch.—The Wool market here during the past week has been extremely dull. Scarcely any business has been done either in Scotch laid and Cheviot, or Foreign Wools. This flatness is accounted for by the present London sales, towards which the attention of the trade seems almost exclusively directed.

	s.	d.		s.	d.
Laid Highland Wool, per 24 lbs.	7	9	to	8	6
White do. do.	00	0		00	0
Laid Crossed do.. unwashed	8	6		9	0
Do. washed do.	9	0		10	3
Do. Cheviot unwashed do.	8	6		10	0
Do. washed	13	0		15	0
Cheviot white, washed	18	0		20	0

FOREIGN.

CITY, August 23.—The quantity of wool imported into London last week was 2504 bales, 815 of which were from Sydney, 557 from Russia, 383 from South America, 395 from Germany, 227 from Spain, 97 from Lisbon, and 30 from Denmark.

The important public sales of wool commenced on the 17th inst. under the most favourable circumstances, viz., an exceedingly crowded attendance, and a manifest disposition to do business; and we are happy to add that the progress of the auctions ever since has been distinguished by the same features, leaving in fact nothing to be desired, either as respects prices or demand. In most instances fully the previous rates have been obtained, and for many parcels higher quotations have been obtained. These sales are the largest ever held, and will comprise 20,000 bales. Up to this evening about 7,300 bales have passed. An erroneous impression seems to have prevailed in the North of England, that prices would not be supported at these sales; but, as we have before observed, the result is so favourable as to be likely soon to dissipate it.

The sales were opened on the 17th inst. by Messrs. J. T. Simes and Co., who put up 1686 bales, all Colonial At this auction Australian sheep's realised 1s. 6d. to 1s. 10½d. and 2s. for washed, and 6½d. to 11d. for unwashed. The Van Diemen's Land went at 1s. 2½d. to 2s. 2½d. for the former, and 8½d. to 9d. for the latter. South Australian realised 1s. 4½d. to 1s. 5d.; Swan River 1s. 4½d. to 1s. 5d. for sheep's, and 1s. 3d. to 1s. 6d. for lambs; and Cape 1s. 4d. to 1s. 9d. for clean, and 6½d. to 10½d. for greasy parcels.

On the 18th inst., the same firm offered 1405 bales, including Australian and Van Diemen's Land. The Australian realised 1s. 4½d. to 2s. 0½d. washed samples, and 9d. to 10½d. for greasy. Van Diemen's Land sheep's went at 1s. 3d. to 1s. 8½d., and lambs at 1s. 6½d. to 1s. 7d. per lb.

On Thursday, Messrs. Loughman and Hughes offered 1539 bales, 239 of which were Port Philip, and the rest Australian and Van Diemen's Land. The Australian sheep's realised 1s. 3½d. to 2s. 2½d., and the lambs 1s. 5d. to 2s. 1d. Sheep's in the grease brought 8d. The Van Diemen's Land sheep's realised 1s. 2d. to 1s. 9d.; and the lambs 1s. 9½d. per lb.

On Thursday, Messrs. Thomas Southey and Son, offered 1239 bales, 609 of which were Australian, 583 Van Diemen's Land, and the rest Swan River and Cape. The Australian sheep's ranged from 1s. 2½d. to 1s. 10d., and the lamb's from 1s. 5½d. to 1s. 8d. The Van Diemen's Land was at 1s. 5d. to 1s. 7d., the Swan River at 1s. 2d. to 1s. 6d., and the Cape at 1s. to 1s. 6d. Six bales of Cape wool in the grease obtained 8d. per lb.

The sale of Saturday was by Messrs. Southey and Son, and included 1420 bales of Australian, Van Diemen's Land, and Cape. This sale, like the preceding ones, went off with spirit, and with a full attendance of buyers.

LEEDS, Aug. 20.—In consequence of the London wool sales now progressing having caused a great number of buyers to leave the market, scarcely an average business has been transacted, but should this fine weather continue, there is little doubt of a considerable reaction in the trade taking place.

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

Bone-dust, 21s. 6d. per qr. of 8 bushels
Half-inch ditto, 21s. per qr. do.
Rape-dust, 7*l*. 0s. per ton.
Rags, 4*l*. to 4*l*. 10s. per ton.
Graves, 5*l*. to 5*l*. 10s. per ton.
Gypsum, 38s. per ton.
Salt, 2*l*. 5s. dirty, 2*l*. 15s. clean, per ton.
Lance's Carbon, 12s. 0d. per qr.
,, Humus, 14s. 0d. ,,
Soap ashes, 10s. per ton.
Artificial Manure, 12s. per qr.
Poittevin's Patent Disinfected Manure, 13s. 6d. per qr.
Nitrate of Soda, 22s. 6d. to 24s. 0d. per cwt.
Nitrate of Potash or Saltpetre, 26s. 6d. to 27s. 0d. per cwt.
Willey Dust, 4*l*. 4s. per ton.
The Urate of the London Manure Company, 5*l*. 5s. per ton.
Alexander's Chie-fou, or Chinese Manure, 21s. per cwt.

PRICES OF SHARES.

No. of Shares.	IRON RAILWAYS.	Price per Share.	Div. per Share per Ann.
6,300	Birmingham & Derby Junc. 100l sh	—la 0l	1½lper sh
6,300	Ditto ⅓ shares ...... 25l sh 15l pd	—la0l	10s p sh.
9,500	Ditto and Gloucester .... 100l sh	60la0l	
9,500	Ditto Quarter Shares...... 2½l pd	1½la2l	
15,000	Bristol and Exeter..100l sh 60l pd	31la3l	
9,300	Ditto and Glouces.. 50l sh 5l pd		
7,500	Cheltenham & Great West. Union 100l sh 62½l pd	21½la0l	
3,000	Clarence (Durham)........100l sh	—l a0l	
64,000	Eastern Counties ....25l sh 23l pd	7½l a8l	
64,000	Ditto Debentures..8l 6s 8d..6l pd	7½la8l	
18,000	Edinburgh & Glasgow 50l sh 40l pd	38la0l	
10,918	Grand Junction ....100l sh	201a2l	13lper ct
10,918	Ditto Half Shares..........50l sh	101l a0l	13lper ct
10,918	Ditto Quarter Shares 25l sh 2½l pd	27½l a 0l	1l
10,000	Great N. of England 100l sh 90l pd	—la0l	
25,000	Great Western .... 100l sh 65l pd	78½la9½l	3l per ct
25,000	Ditto Half Shares..........50l sh	54¾l a5¼l	3l per ct
37,500	Ditto Fifths..........20l sh 4l pd	7⅞l a8⅓l	3l per ct
8,000	Hull and Selby............ 50l sh	0la0l	
36,000	London and Brighton ......50l sh	44⅞l 5al	
33,000	London & Croydon..Av. 13l 15s 9d	12¾la 13¼	
20,000	London and Greenwich .... 20l sh	7½la8½l	7s per sh
9,000	Ditto New .... 16l sh	17la18l	1l per sh
80,000l.	Ditto Debentures (various amounts)		
	Ditto Scrip .. .. 6½l each 5l pd	5¾l a 6l	
24,000	London & Blackwall ...... 25l sh	15½la¾l	
1,500	Leicester and Swannington..50l sh	55l	2½l
2,100	Leeds and Selby.......... 100l sh		4l per sh
5,100	Liverpool and Manchester..100l sh	195lex-d.	9½lper ct
11,475	Ditto Quarter Shares .... 25l sh	47l	9½lper ct
7,968	Ditto Half Shares .... 50l sh	93l a0l	9½lper ct
36,000	London & S. Western, late London and Southampton Av. 38l 17s 9d	51½la2½l	3l per sh
3,600	Ditto New Shares ....50l sh 25l pd	27la0l	
6,000	Do. Portsmouth Branch 50lsh 45lpd	45la6l	5l per ct
25,000	London & Birmingh. 100l sh 90l pd	160la2l	8½lper ct
25,000	Ditto Quarter Shares 25l sh 5l pd	22½la3½l	8½lper ct
31,250	Ditto .... 32l sh	53la 4l	8½lper ct
25,000	Ditto New.......... 32l sh 2l pd	23la4 l	
13,000	Manchester & Leeds 100l sh 70l pd	56la8l	
13,000	Ditto Half Shares .. 50l sh 30l pd	23la4l	
30,000	Manchester & Birming. 70l sh 40l pd	20la1l	
10,000	Midland Counties .... 100l sh	78la80l	
10,000	Ditto......¼-Shares of 25l 15l pd	19l a0l	
15,000	North Midland .... 100l sh	64l a 65l	
15,000	Ditto Half Shares ....40l sh	31la2l	
22,500	Ditto ⅓ shares of 32l 6s 8d .10l pd	9la10l	
10,250	Northern & Eastern 50l sh 30l pd		
3,762	Severn and Wye .. Average 27l sh	45l	2l12s psh
1,000	Stockton and Darlington..Average 106l 13s 4d	255l	14lper sh
28,000	S. Eastern and Dover 50l sh 33l pd	16½l a17½	
6,000	York & North Midland 50lsh	76la8l	9l per ct
6,700	Ditto Half Shares....25lsh 10l pd	22la0l	
	JOINT STOCK BANKS.		
15,000	Australasia Bank (Chartered) 40l sh	54½l	8l per ct
7,500	Ditto New Shares... 40l sh 10l pd	14⅛l a0l	
10,000	Bank of Ceylon (Chart.) 25l sh 15l pd		
20,000	Bank of B. N. America (Chart.) 50l sh 40l pd	34la0l	6l per ct
20,000	Colonial Bank (Chart.) 100l sh 25l pd	30½l a1½l	8l per ct
2000	Com. Bk. of London 1000l sh 200l pd	180l	
4,000	Ionian State (Chart.) 25l sh 20l pd	15la16l	
30,000	London and Westminster Bank 100l sh 20l pd	22la½l	6l per ct
10,000	New Shares ....100 sh.15l pd	—l a 0l	
60,000	London Joint Stock Bank 50l sh 10l pd	12¼l a½l	5l per ct
12,432	Do New, issued at 1l pm 50l sh 10l pd		
20,000	National Bank of Ireland..50l sh 17½l pd	16l a½l	6l per ct
10,000	Do. Provincial Bank of England 100l sh 35l pd	33¾la 4½l	6l per ct
7,739	Do. New 20l sh issued at 2l 10s pm 10l pd	9½la0l	6l per ct
20,000	Provincial Bank of Ireland 100l sh 25l pd	40la0l	8l per ct
4,000	Ditto New............10l sh	15la16l	8l per ct
20,000	Union Bank of Australia..25l sh	30l a1l	50s pr sh
12,000	Ditto New 25l sh 15l pd	19la20l	
6,000	Union Bk. of London 50l sh 10l pd	9¾l a0l	5l per ct
50,000	West of England and South Wales District Bank ..20l sh 12½l pd		6l per ct.

Shares.	CANALS.	Price.	Dividend
1,760¼	Ashton and Oldham Av. 97l 18s sh	109½l	7l
1,482	Ashby-de-la Zouch Average 113l sh	72la0l	4l
720	Barnsley..................160l sh	290l	14l
1,260	Basingstoke ....100l sh	5l	
1,005	Brecknock & Abergavenny 150l sh	91l a92l	6l
8,800	Birmingham 1-16th sh. 8l 15s....	198l a9l	10l
4,000	Birm. & Liverpool Junction 100l sh	21l a3l	
100,000l	Do. do. Debentures (var. amounts)		
600	Bridgewater and Taunton..100l sh	60l	3l
159,631l	15s 0d Calder and Hebble..100l sh	365l	18l
500	Coventry .... 100l sh	360la0	32l
20,000	Danube and Mayne..41l 13s 4d sh	29l	4l per ct.
2,060¾	Dudley ....100l sh	90la3l	5l
3,575¾	Ellesmere and Chester Av. 133l sh	80la0l	4l
1,297	Forth and Clyde ..Av. 400l 16s sh		30l
11,600	Grand Junction..........100l sh	110la12l	7l
2,849½	Grand Union............ 100l sh	26½la7l	1¾l
1,500	Grand Surrey.... .... 100l sh	15l	
120,000l	Ditto Debentures .... 100l sh	67l	4l per ct
3,096	Grand Western ....100l sh	10l	
600	Glamorgansh. Av. cost 172l 13s 4d	210l	13l12s 8d
5,000	Gloucester and Berkley .. 100l sh	13la0l	
6,239	Huddersfield .. Aver. 57l 6s 6d sh	27la0	2l
25,328	Kennet & Avon Av. 39l 18s 10d sh	22½la0l	1l 10s
11,699½	Lancaster....Average 47l 6s 8d sh	28la0l	1l 10s
2,879¼	Leeds and Liverpool......100l sh	750l	30l
18¾	Ditto (New)................80l sh		16l
540	Leicester..................140l sh	155l	12½l
1,897	Leicester & Northamp. Av. 83l 10s	73la0l	5l
70	Loughborough....Av. 142l 17s sh	1570l	180l
3,000	Macclesfield..............100l sh	28l	2l
2,409	Monmouthshire ....100l sh	200l	10l
711	Montgomery (East. Branch) 100l sh	100l	5l
500	Mersey and Irwell................	545l	25l
247	Neath....................100l sh	365l	20l
521	Oakham..Average cost about 130l	73la5l	5l
1,786	Oxford. ....100l sh	590la0l	30l
2,400	Peak Forest Average about 78l sh	73l	5l
2,520	Portsmouth and Arundel .. 50l sh		
2,000	Ditto New ....25l sh		
21,418	Regent's (or London) Average 33l 17s 2d sh	8¾l	5s 6d
5,669	Rochdale..........Average 85l sh	87l	6l
500	Shropshire ....100l sh	138l	8l
800	Somerset Coal ....150l sh	120l	12l
3,600	Ditto Lock Fund......12l 10s sh	11¼l	6l per ct
700	Stafford and Worcester....140l sh	620l	36l
500	Shrewsbury ....125l sh	280l	16l
300	Stourbridge ....145l sh	396l	20l
3,647	Stratford-on-Avon Av. 79l 9s 8d sh	32la4i	2l
200	Stroudwater..............150l sh	500l	28½l
533	Swansea ....100l sh	230la2l	12½l
1,300	Thames and Severn, black 100l sh	36l	2l
1,150	Ditto ditto red..100l sh	40l	2l
2,600	Trent and Mersey......¼ sh 50l	560l	32l 10s
8,149	Thames and Medway, Average 19l 5s 8d sh	2l	
3,200	Ulster...............50l sh pd		
1000sh 1000 ½	Warwick and Birmingham 100l sh	235l a40l	14½l
980	Warwick and Napton.... 100l sh	130l a 5l	12l
6,000	Worcester and Birmingham, Av. 78l 8s sh..	52l a3l	4l
5,000	Wilts and Berks, Av. 67l 10s 8d sh	30l a0l	1l 16s
905	Wey and Arun..........110i sh	22½l	1l
	MISCELLANEOUS.		
10,000	Anti Dry Rot Company .. 18½l sh	0la0l	5s per sh
10,000	Assam Tea Company 50l sh 12½l pd		
1,080	Auction Mart .... 50l sh	20l	20s pr sh
10,000	Australian (Agricultural) 100l sh 28l 2s pd	40l a0l	35s pr sh
10,000	Canada Company (Chartered) 100l sh 32½l pd	29la0l	6l per ct
5,000	Droitwich Patent Salt .... 25l sh	16la0l	25s
2,700	Equitable Reversionary Interest Society 100l sh 60l pd		4l per ct
20,000	General Steam Navigation Company 15l sh 14l pd	23¾l a4½l	1l8s pr sh
1,800	Ditto Cemetery (Chartered) 25l sh		6l per ct
1,800	Ditto New (Chartered) 25l sh		6l per ct
2,100	Hungerford Market ...... 100l pd	32l	20s pr sh
24,800	Ditto Debentures (var. amounts)..		5l per ct
5,000	London Cemetery (Chartered) 20l sh		

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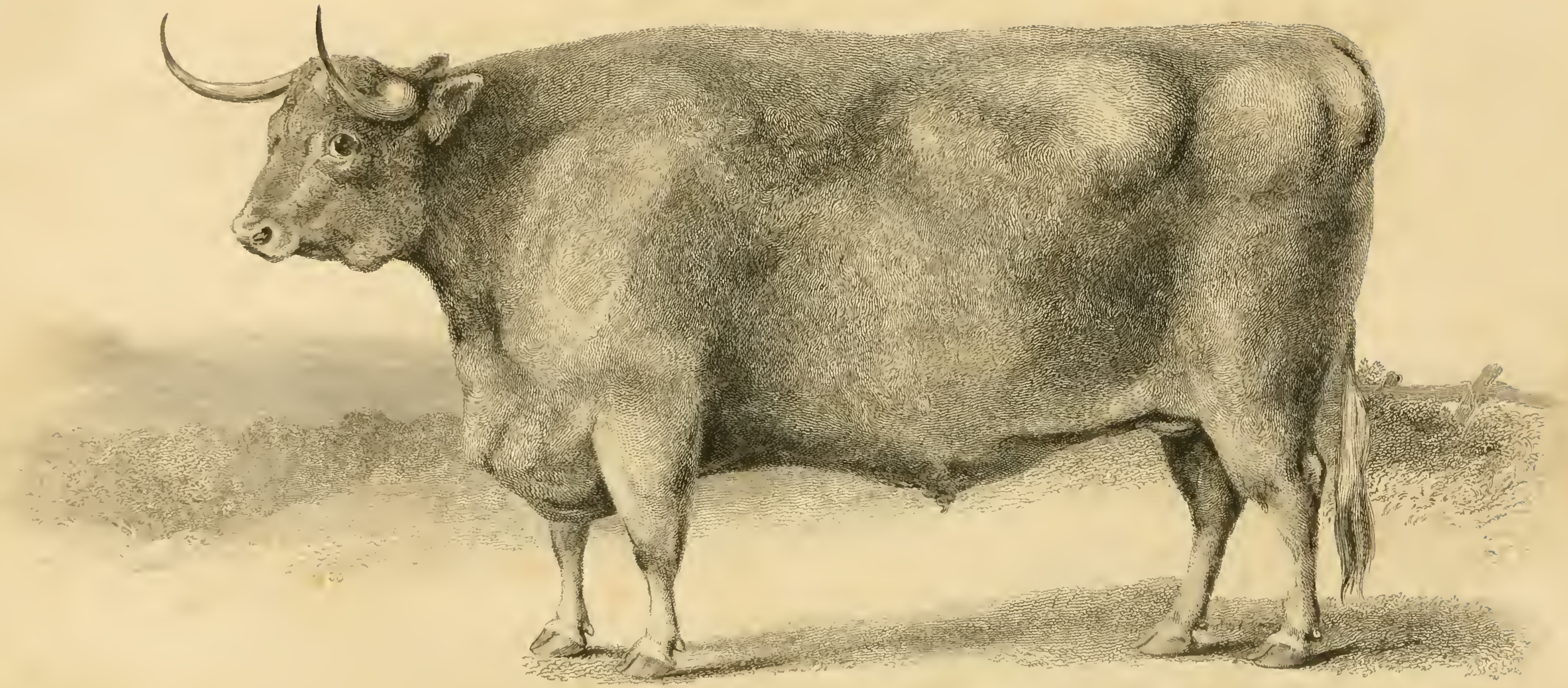

West Highland Ox

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THE FARMER'S MAGAZINE.

OCTOBER, 1841.

No. 4.—Vol. IV.] [Second Series.

PLATE I.

The subject of the first Plate is a West Highland Ox, the property of Sir John M. Mackenzie, of Delvin, Bart., for which a Prize was awarded at the Highland and Agricultural Society's Show, held at Aberdeen, October, 1840.

PLATE II.

GHUZNEE.

Ghuznee is a beautiful bay, and has been thus described by Mr. Herring, whose judgment in all matters connected with the horse, we feel assured, will ever be respected:—"Her head is clean, with rather long ears, fine eyes, and large open nostrils; her neck straight, with open gullet, immensely strong and oblique shoulders, full chest, great fore and back ribs, large hips, and very wide over the loins; long drooping quarters, tail set on low, very powerful in the gaskins, with most extraordinary thighs and arms for so small a mare; good knees, strong and clean hocks, flat short legs, and excellent feet. Take her altogether, she is decidedly the strongest mare I have ever seen as a thorough-bred."

LIEBIG'S ORGANIC CHEMISTRY.

BY J. TOWERS.

No. IV.

We request the reader to peruse again the last column of our article, at page 167, wherein, while endeavouring to rescue our author from the charge of inconsistency, we professed ourselves "to differ" from him in his leading position (No. 6), in which he maintains that "an atmosphere of *carbonic-acid* is therefore contained in every fertile soil, and *is the first and most important food for the young plants which grow upon it.*"

By "young plants" he intends to express—1st, *Seedlings* of every description during their first stage of growth, during which the plumule emerges from the integuments of the seeds, elevates itself above the surface of the ground, and expands its first or seed-leaf; 2nd, the earliest developments of herbaceous plants, with a biennial or perennial root. Presuming that the proper leaves are the organs by which all plants absorb carbonic acid gas from the atmosphere, and taking this as his leading principle, Liebig infers that until plants obtain these inspiratory organs, they possess no other channels than the roots, through which they can derive nutriment; and therefore he takes it for granted that the required carbonic acid is so introduced in a state of watery solution.

Physiologists, who understand the structure of seeds, are perfectly aware that they are provided with organs adapted to supply them with their first nutrimental aliment; and experience also shows, as in the familiarly known process of malting, that seeds will germinate, and protrude their first leaf and roots without the presence of soil. The plantlets will also advance till that leaf be fully expanded; but they refuse (generally speaking) to make further progress, unless their roots are placed within a medium or bed, wherein they not only can ramify, but also maintain that connection with the atmosphere which it is the peculiar function of the foliage and of all pointed terminations to establish.

The dwarf kidney bean elevates its two substantial cotyledons above the soil, and these continue vital, though they gradually dwindle till the first leaves are fully expanded; at that period the intercourse between the advancing plant and the ground is fairly formed, and the wasted cotyledons fall. Seeds therefore are provided by nature—some with a vitellus or albumen, and fleshy cotyledons—according to the law of their structure, and these organised substances supply the plantlet with food, till its foliage and roots can act in concert; then, and not till then, they are vital to it, and if an accident occur previously to them, debility, if not destruction, is the result. Thus every existing fact tends to prove that seedling plantlets do not require carbonic acid.

Herbaceous roots contain a provision of laborated substances during their state of winter torpor, and these are perfectly qualified to furnish the swelling buds of spring with food, till the period of the expansion of leaves: the same may be said of underground stems or bulbs, tuberous roots, root-stocks, and the like; and thus we obtain negative evidence at least, that carbonic acid is not absorbed from the soil.

A third argument is supplied by the interesting experiments of Mr. Ward, of Wellclose Square, which have shewn that ferns of all countries, orchidaceæ, fuchsias, begonias, and many other plants, may be grown with perfect success in close glass cases, during a course of years, without any admission of air, or the application of fresh soil, manure, or water. The atmosphere of the locality is foul with the smoke and filthy vapours of the loathsome adjoining streets and lanes—it is surcharged with soot from the chimneys of the Thames steam-boats; yet the air, being filtrated through the soil, becomes so pure as to support a very healthy vegetation, clean as in the country. Doubtless the decomposible substances in the soil furnish carbonic acid, and certainly water, for the inner surface of the glass cases are covered with the latter, which arises in the form of vapour. But all the experiments of the ablest philosophers concur in proving that plants, under glass, take in carbonic acid by their leaves, and laborate it in their organs, and therefore it is permitted to infer that the carbonic acid developed in the soil escapes through the surface, and blends with the atmospheric volume.

It has been found, as already stated, that soil becomes of a deeper tint by cultivation; therefore carbon or coaly matter is deposited, and this deposition proves that a species of slow combustion is constantly going on in land under crop. The carbon so produced, and constantly increasing, is not acted upon by oxygen under ordinary circumstances; it therefore cannot be deemed the source of carbonic acid. Hence, we presume that, as infant plants in their first stages require no other food than that which is deposited in their seeds or tissue, all the carbonic acid gas which is laborated within the soil escapes into the air, and thence is absorbed by the developed leaves; and thus, while we differ from the German chemist upon one leading point, we relieve him from the appearance even of self-contradiction.

The singular fact, that rain-water contains ammonia derived from decaying animal matter, is announced by Liebig; its correctness is questioned by some chemists, but is confirmed by his present critic, who thus expresses himself:—"We have ourselves repeated his experiments with precisely similar results, and can bear testimony to the fact which we have heard several deride as fanciful and chimerical, namely, that the ammonia contained in rain-water 'possesses the offensive smell of perspiration and animal excrements.'"

The difficulty of instituting comparative experiments consists in this—that if the rain-water be collected from roofs, or even glass sashes, near the residence of man, it will be tainted with soot, and soot contains a salt of ammonia (the *muriate* or *sulphate)*; thus the result will be ambiguous, although ammonia be assuredly detected.

Of the *inorganic constituents of plants.*—On this important inquiry "Liebig's Organic Chemistry" contains twenty-four pages, namely, from 92 to 116. "In this portion of the work also," says the review, p. 115, "we have much pleasure in cordially agreeing with the learned professor in several most valuable observations which he has made regarding the saline constituents of plants." Here, as elsewhere, he agrees with the chemical theories, but disputes their practical application. We cannot follow him in his profound calculations, nor do we desire to dispute any of his positions: if Liebig had done no other service to agriculture than to elicit so much science on its behalf, he would not have written in vain; for there now can remain no longer any doubt that chemistry and science must ultimately prevail; but that to effect so great a consummation, the rising generation must receive a scientific education. We will now however cite a few lines from our author; for, whatever be the inferences deduced, their mere recital will prove a treat to the philosophic inquirer.

"Carbonic acid, water, and ammonia, are necessary for the existence of plants, because they contain the elements from which their organs are formed; but other substances are likewise requisite for the formation of certain organs destined for the special functions of each family of plants. *Plants obtain these substances from inorganic nature.*"

"Phosphate of magnesia in combination with ammonia is an invariable constituent of the seeds of all kinds of grasses. It is contained in the outer horny husk, and is introduced into bread along with the flour, and also into beer. The bran of flour contains the greatest quantity of it."

"Most plants, perhaps all of them, contain *organic* acids of very different composition and properties, all of which are in combination with bases *(inorganic)*, such as potash, soda, lime, or magnesia. These bases evidently regulate the formation of the acids, for the diminution of the one is followed by the decrease of the other; thus in the grape, for example, the quantity of potash contained in its juice is less when it is ripe than when unripe; and the acids, under the same circumstances, are found to vary in a similar manner." "Leaves contain more inorganic matters than the branches, and the branches more than the stem. The potato plant contains more potash before blossoming than after it." "All plants yield by incineration ashes containing carbonic acid; all, therefore, must contain salts of an organic acid."

The reader who grows tobacco for fumigation may satisfy himself by a very pleasing experiment of the truth of this last remark; or, in the absence of tobacco, the haulm of potato, which plant is of the same natural family, will answer the same purpose. The juice of the green herb does not effervesce with acid, but if the herb be dried and burnt to a white ash in a crucible or other vessel which will prevent its contact with the fuel, the ash will hiss and froth when diluted muriatic acid is applied; this commotion is occasioned by the escape of a volume of carbonic acid gas, the alkali or alkaline earth with which it was united being dissolved by the acid. If a solution of prussiate of potass be dropped into the solution, a deep blue precipitate will be produced, proving that iron is present in the ashes; finally, on adding a solution of carbonate of potash, a quantity of very fine chalk will be deposited. Now, as neither of these substances are traceable in the green herb, it follows of course that the iron and chalk were held by some vegetable or mineral acid in a state of chemical union, which acid was driven off or decomposed by the fire.

"It is not known in what form silica, manganese, and oxide of iron are contained in plants, but we are certain that potash, soda, and magnesia can be extracted from all parts of their structure in the form of salts of organic acids. The same is the case with lime, when not present as insoluble oxalate of lime. It must here be remembered that in plants yielding oxalic acid, the acid and potash never exist in the form of a neutral or quadruple salt, but always as a double acid salt, on whatever soil they may grow." (An example of this occurs in the expressed juice of rhubarb stalks, which contains the salt of sorrel, or bioxalate of potassa.) "The potash in grapes, also, is more frequently found as an acid salt, viz., cream of tartar, than in the form of a neutral compound. As these acids and bases are never absent from plants, and as even the form in which they present themselves is not subject to change, it may be affirmed that they exercise an important influence on the development of the fruit and seeds, and also on many other functions of the nature of which we are at present ignorant."

"From these considerations, we must perceive that exact and trustworthy examinations of the *ashes of plants of the same kind growing upon different soils*, would be of the greatest importance to vegetable physiology, and would decide whether the facts above mentioned are the results of an unchanging law for each family of plants." "In all probability such enquiries will lead to most important results; for it is clear, that if the production of a certain unchanging quantity of an organic acid is required by the peculiar nature of the organs of a plant, and is necessary to its existence, then potash or lime must be taken up by it, in order to form salts with this acid; that if these do not exist in the soil in sufficient quantity, other bases must supply their place; and that the progress of a plant must be wholly arrested when none are present."

"The existence of vegetable alkalies in combination with organic acids, gives great weight to the opinion that alkaline bases in general are connected with the development of plants.

"If potatoes are grown where they are not supplied with earth, the magazine of inorganic bases, (in cellars for example) a true alkali called solanin, of very poisonous nature, is formed in the sprouts which extend towards the light, while not the smallest trace of such a substance can be discovered in the roots, herbs, blossoms, or fruits of potatoes grown in fields." (101)

The above quotations from Liebig may serve as examples of the many chemical facts which his critic styles "beautiful illustrations," yet he attacks him in all his practical applications of science. "Liebig," he observes, (*Quar. Jour. of Agriculture, p.* 117,) "lays great stress upon the importance of the alkalies, potass and soda, and likewise endeavours to explain a vast number of agricultural phenomena by the soil having become exhausted of these valuable materials." He observes at p. 151—

"Again, how does it happen that wheat does not flourish in a sandy soil, and that a calcareous soil is also unsuitable for its growth unless it be mixed with a considerable quantity of clay? It is because these soils do not contain alkalies in sufficient quantity—the growth of wheat being arrested by this circumstance, even should all other substances be presented in abundance." Hereupon the critic enters upon a profound and fractional calculation, which is assuredly very erudite and diffuse, occupying nearly two pages; and in it there is produced apparent proof, that from an imperial acre of such soil, 30 tons of Swedes, 62 bushels of barley grain, 2000lbs of straw, 200 stones of hay, and finally, a good crop of oats may in rotation be taken; from which calculation he obtains a deduction, that—"No less than 1091lbs. of *saline* matter, of which 702lbs. have precisely the same constitution as the ashes of wheat, and the remaining 389lbs. contain at least three times the quantity of alkali possessed by an equal weight of the earthy matter of any of the gramineæ. Nevertheless, we are told by M. Liebig, that sandy soil cannot produce good crops of wheat, owing to a deficiency of alkali; I need scarcely remark that the above mentioned facts render M. Liebig's argument completely untenable."

Victory! Alas, poor Liebig, here is a smasher! but stay a little. First then, as a slight reliever, among all your crops you have grown no wheat! You have produced turnips, barley, grass, oats, but where is the wheat? Your results however have *precisely the same constitution*, only with the difference that they have not been obtained from wheat! But in this difference we discover a *leetle "flaw in your main link,"* and then, to add to the dilemma, Liebig has limited himself to the simple assertion, that sandy and calcareous soils are unfit for wheat, making no allusion whatever to manures; whereas you unfortunately make it your point *d'appui*, thus: at p. 119—"*after one application of manure, a sandy* soil is capable of yielding" all this surplus of *saline matter*, &c., &c. Why yes, if you first add it to the soil, you may with safety look for it in the results: and now, having found a key to the mystery, we will investigate the position of the argument a little more minutely.

In the succeeding paragraph we read—"When farm-yard dung is employed for enriching land, from 25 to 30 tons per imperial acre are ploughed in at the commencement of each rotation. According to a very careful analysis which we made of this substance in the state in which it is applied to the soil, we find that it contains on an average, 10.9 per cent. of saline matter, which will, of course, possess precisely the same constitution as the ashes of plants. If we consider the proportion of saline matter of farm-yard dung at 10.9 per cent., it follows that 30 tons will contain no less than 7324lb.; but the whole crops of the rotation contain only 1091lb. It follows, therefore, that instead of the quantity of saline matter diminishing in soil, it increases at the rate of 6233lb. in every rotation, or 1558lb. per annum."

And thus the first criticism concludes, (p. 120) with an announcement of being resumed.

In this last passage, we find it distinctly asserted, that manures add salts to the soil, and this fact is adduced to repudiate the doctrine of Liebig; that refers to *loam* and *native earths* as the natural depositories of the alkalies. From the article on manure (which commences at p. 172 of the "Organic Chemistry)" we select the following extracts: —"The fertility of a soil cannot remain unimpaired, unless we replace in it *all those substances* of which it has been deprived."

"The peculiar action of the solid excrements is limited to their inorganic constituents, which thus restore to a soil that which is removed in the form of corn, roots, or grain. When we manure land with the dung of the cow or sheep, we supply it with silicate of potash, and salts of phosphoric acid. In human fœces, we give it the phosphates of lime and magnesia; and in those of the horse, phosphate of magnesia, and silicate of potash. In the straw which has served as litter, we add a further quantity of silicate of potash and phosphates, which, if the straw be putrified, are in exactly the same condition in which they were before being assimilated."—p. 181.

Thus it appears that the author had anticipated his reviewer in this, as in every other particular; for he ascribes the restoration of the exhausted alkalies and saline matters to the manures.

We see then how frivolous have been the attacks made upon him, and how gratuitous every charge of inconsistency!

But let us take a passing glance at the course indicated by nature and empirical practice. Liebig assumes, and he is not solitary in the assumption, that disintegrated rocks and loams are the magazine of the alkalies, of potass particularly. Trees and shrubs, *ab origine*, have derived all their alkalies from the earth, and in their decay return them to it. In treating of the "art of culture," he made the remark that sands containing little loam are ill calculated to produce a crop of wheat, which demands much saline matter; but he says not one word of *manure*, nor did it enter his calculation. But the critic, in his ill-advised zeal, adduces a rotation which commences with *the application of 30 tons of manure to the acre!* Here then, there is no ground of attack—no point of difference to be combatted—the writer therefore assails a shadow, a bugbear of his own creation; and thus his learned calculations are rendered valueless.

Again, if alkalies and salts be required as essential to vegetation, we obtain a key to the application of common salt, soda, and its nitrate, which have of late years been so highly extolled; for they add saline matters to the land, and thus promote vegetation when the soil is minus of those inorganic manures. But this fact of so restoring alkalies and salts by other means than manuring, confirms the validity of the chemist's position.

Once for all, the critic merits, and claims the thanks of science for his noble article; in it he presents a striking proof of the vast advantages which agriculture must ultimately derive from chemistry. It is his mode of attack which we lament—the spirit which urged him to destroy a learned, but most modest writer, in whose wake he himself followed—whose chemical principles he sanctioned—but which he nevertheless denounced as practically false and delusive.

As to his object and pretension, let Liebig speak for himself. "Since the time of the immortal author of the 'Agricultural Chemistry,' no chemist has occupied himself in studying the application of chemical principles to the growth of vegetables, and to organic processes. I have endeavoured to follow the path marked out by Sir Humphrey Davy, who based his conclusions only on that which was capable of enquiry and proof; this is the path of true philosophical enquiry, which promises to lead us to truth—the proper object of our research." (preface). Again, at p. 141, he observes—"It is the duty of the chemist to explain the composition of a fertile soil, but the discovery of its proper state and condition belongs to the agriculturist; our present business lies only with the former."

The "Organic Chemistry" thus becomes a text-book of agricultural chemistry, and we invite all our readers to peruse it—not as a book of pretence, but one replete with the purest philosophical facts. It is open to, and invites research, but is beyond the reach of obloquy.

Let its assailer be studied also with the deepest attention, and then it will be seen who has in reality broken ground and paved the road to science; and thus, in every way, its cause will acquire friends, advocates, and promoters.

ON GEOLOGY AND ITS CONNECTION WITH AGRICULTURE.

(ORIGINAL.)

In this age of rapid agricultural improvement, it is not surprising that numerous theories should be broached, and many novel statements made, which practice will not sanction, and which experience, perhaps dearly bought, will certainly one day prove to be fallacious. The disposition to generalize too freely, from imperfect and insufficient data, is by far too common; and it is surprising how a plausible theory will be believed and promulgated, rather than submit to the rational and sober test of experiment. Agricultural improvers must be cautious, lest by overstepping prudence they create only a disposition to revert to the prejudices of the past, to avoid the uncertainty of new innovations. Professor Liebig's Organic Chemistry is to be the text book of all scientific improvers, and the Daubenian, Henslowean, and Johnstonian school rapidly take for granted all the statements, reasonings, and conclusions of that doubtless elaborate chemist.

His work, however, smells too strong of the laboratory to be very practically useful, for it is quite impossible to conduct chemical experiments, however accurate, and arrive at practical results, in the closet; so many are the modifications of purely chemical action and combination when put in operation in the soil and atmosphere, and more especially when in connection with organic and vital action, than when under the control of the chemist in his study. Liebig's theory is, as I understand it, simply this—and if I mistake it, somebody (probably Mr. Towers) will set me right—that all vegetables feed solely from gases, excepting certain mineral principles which they extract from the soil rather for elemenition than nutrition, and that all plants feed principally from the atmosphere. Whether this will or not tend to make the farmer apply more manure, or apply glass and nitric acid to supply mineral constituents to plants, I am unable to divine; but I do conceive that if he is so implicitly believed in as to induce this opinion, the result will neither be to the satisfaction of the cultivator or consumer.

The drift of these observations however is directed rather to the geological than the chemical theories extant amongst many clever, estimable, and zealous improvers, and those of the most scientific character. All our geological examinations are driving at the theory, that the character of the soil *invariably* depends upon the strata upon which it rests; that every soil is formed by the disintegration of its parent rock, and therefore is to be judged of and cultivated according to the known chemical analysis of the rock from which it is or is supposed to be formed, and that farmers are to manage their farms chemically and geologically accordingly. That this doctrine is true so far as the mechanical influence of the substratum on the soil, as porous or impervious, there can be no doubt; but contradictions to the general principle are so numerous, that it cannot long obtain credence. It appeared from a paper read by Sir C. Lemon before the statistical section of the British Association, "On the Agricultural Products of Cornwall," that the chemical analysis of the soils exhibited a total absence of some of the characteristics of the rocks beneath. The feldspar in granite contains about seventeen per cent. of potash, but there is no potash in the soil above. The serpentine contains from thirty to forty per cent. of magnesia, but there is no magnesia in the soil of the Goonhely downs. Yet these are indestructible substances, and if the soil had been formed of the decomposition of the rocks beneath, a considerable quantity of each must have been present. The Goonhely downs are on an extensive and elevated plateau. This must be accounted for, or the theory falls. W. E. N.

RURAL CHEMISTRY.

There are three other acids besides nitric acid which are of importance, as entering into the composition of some of the commonest salts in nature; they are called sulphuric, muriatic, and phosphoric acids. Sulphuric acid, or oil of vitriol, is one of the strongest acids we are acquainted with, being able to expel or drive out most other acids from their combinations, and, consequently, we are able through its means to obtain nearly every acid in a free and pure state. It is a compound of sulphur or brimstone with oxygen, but it is not obtained by merely burning sulphur in the air: when this is done, acid fumes, it is true, are made; but the acid thus formed is not sulphuric—it is a compound containing less oxygen than is necessary to compose that acid, and stands in the same relation to sulphuric acid which carbonic oxide does to carbonic acid; it is called sulphureous acid, and is always formed when sulphur is burnt in common air, when it is unable to obtain enough oxygen to be converted into the stronger acid. A portion of sulphureous acid is formed whenever we light a common brimstone match; and the peculiar suffocating smell then perceived is occasioned by this acid, and not by the sulphur alone, which has no smell, but which is used to tip the matches because it has a strong affinity for oxygen, and requires less heat to enable it to commence combination than the wood itself; but when it has once fairly got alight, it then produces heat enough to fire the wood. Sulphureous acid does not form any important compounds when combined with bases, and its principal interest consists in its bleaching powers. It has long been used to destroy colour in things desired to be bleached, which are merely hung up over some burning sulphur, and exposed to the fumes of sulphureous acid thus formed. Articles thus bleached, however, frequently retain an unpleasant smell of sulphureous acid. It is likewise used in fumigation, being considered destructive of contagion; and, therefore, sulphur is burnt in houses where persons have died of an infectious disorder, and in other circumstances where evil effects are feared from the communication of disease. In these cases sulphureous acid has really a useful influence, as it seems able to destroy a minute quantity of poisonous matter diffused throughout the air; but it must be remembered that it can have no power of improving air which is unwholesome from the presence of a large quantity of carbonic oxide or carbonic acid; for in these circumstances, burning sulphur would only tend to make the air worse, both by removing oxygen, and also by adding sulphureous acid. The bleaching power of this acid may be very well shown by holding a lighted brimstone match near a dark purple or blue flower, the colour of which will be immediately more or less destroyed, and we may easily thus, either in part or wholly, render the flower white. Sulphuric acid, is made by burning sulphur mixed with nitrate of potash, which supplies it with more oxygen than it could get by merely burning in the air, because the nitric acid in the salt contains a very large quantity of oxygen, and is easily decomposed by any substance which has a strong affinity for oxygen. When sulphur is burnt in this manner, and the fumes produced by its combustion are condensed in cold water, a very acid liquid is formed, which is called oil of vitriol, or sulphuric acid. It is a heavy, very corrosive, poisonous liquid, although its elements are only oxygen and sulphur; the one being that part of the air necessary to support life, and the other, a tasteless, odourless, yellow substance. Sulphuric acid, in its free state, is only remarkable as being one of the strongest acids we know, destroying vegetable and animal substances; that is to say, abstracting and combining with some of their elements, and causing the others to enter into new combinations; and having a strong affinity for bases, with which it forms a class of compounds called sulphates, some of which are of very great importance, and must be considered hereafter.

Muriatic acid is interesting as being one of the components of common salt, which is a compound of that acid with the alkali soda, and is therefore called a muriate of soda. This acid is procured in the same manner as nitric acid, namely, by the action of sulphuric acid on a salt containing it. Sulphuric acid is mixed with common salt; the muriatic acid is expelled by the more powerful acid; a compound of sulphuric acid and soda, called a sulphate of soda, is thus formed, and the acid fumes driven off, being made to pass through cold water are condensed,. and a strong solution is obtained, which is the muriatic acid of commerce. These acid fumes consist of a gas called chlorine, combined with hydrogen, the inflammable element of water. Chlorine is an element which is never found free, but only in combination with some other element; it is a very poisonous gas, causing very great irritation when breathed, even though it is largely mixed with air; it is remarkable for possessing in a very great degree the power which sulphureous acid has of bleaching or destroying colours and also contagious matters. It is, therefore, very largely used in all cases where it is wished to destroy or remove colour: it is, however, a very powerful agent, and therefore must be used with great care; as otherwise if linen, for example, be bleached carelessly by means of it, the texture is destroyed, and the linen becomes rotten and useless. Small quantities of this gas are used with very beneficial effects in removing foul smells, and otherwise rendering sweet and wholesome the air of large buildings, such as hospitals. It is unnecessary for us further to occupy ourselves with this element than to know that when combined with hydrogen, it loses all these peculiar powers, and forms a strong acid, which, by combining with bases, forms a series of salts called muriatics, the most important of which is common salts.

Phosphoric acid is also obtained by decomposing one of its compounds by sulphuric acid. The most abundant compound of phosphoric acid is that in which it is united to lime, called the phosphate of lime: this substance is an ingredient of the bones of animals, and of some vegetable substances. When phosphate of lime is mixed with sulphuric acid, it is decomposed, and the phosphoric acid is set at liberty. Unlike the three acids already spoken of, it is a solid, but very easily soluble in water, and is composed of a very inflammable white solid substance called phosphorus, combined with oxygen. It may be artifically made by burning phosphorus in the air, from which it abstracts the oxygen, and leaves the nitrogen unaltered, just in the same way that carbon burns into carbonic acid; only that in that case, the product of combustion is a gas, like the air, whilst the result of the combustion of phosphorus is a solid acid.

The class of substances called bases, or those with which acids can combine, are also very numerous. The commonest, and therefore the most important, are the three alkalies, potash, soda, and ammonia, together with a few substances called earths, because they are the principal ingredients which enter into the composition of the soil in which plants grow.

The principal source of potash is the vegetable kingdom, and the simplest method of procuring it is by burning wood. When this is done, after all the carbon, hydrogen, and oxygen is burned, there remains a quantity of white or grey matter called ashes, which when put into water renders it caustic. This is occasioned by the presence of potash, which, not being altered by the heat occasioned by the burning of the wood, is left in the ashes. In this way, however, we do not obtain the potash pure, because, being a powerful base, and having a strong affinity for acid, it combines with some of the carbonic acid formed by the burning of the carbon contained in the wood, and therefore the caustic substance found in the ashes of the wood is an impure carbonate of potash. It is purified by pouring water on ashes, straining off the clear liquor, and evaporating it; a white salt is left, which is the carbonate of potash separated from all the other matters which were contained in the ashes, and when thus purified it is called *pearlash*. When potash is obtained pure and free from any acid, it is found to be a very caustic solid substance, which has a strong affinity for acids, and is very difficult to keep, as when exposed to the air, it rapidly acquires carbonic acid from it, and becomes converted into the carbonate. Potash has also a strong attraction for water; so that when dry pure potash is exposed to the air, it very soon becomes moist, and in a short time has attracted so much water from the air, as to appear changed into a liquid. This power of attracting water from the air, is common to most of the salts of potash, as well as to many other saline compounds. Pearlash, if left exposed to the air, rapidly becomes moist, and finally runs into a liquid, which is a very strong solution of that salt in water; and therefore it must always be kept in a dry place, and in well-closed vessels. In the same way, we often find that common salt when kept in a damp place becomes very moist: this is not occasioned by any attraction which the salt itself has for the moisture in the air, but by certain saline impurities usually contained in the salt, which have this power in a high degree. One of the most important of the salts of potash, is the nitrate, or, as it is commonly called *saltpetre*, or *petre*, which is found native in many places, as a white powdery matter on the surface of the ground, and is procured pure by washing the earth, and evaporating the solution of nitre thus obtained.

Nitre is a perfectly neutral salt, and in that respect very different from the carbonate of potash, which, although far less caustic than pure potash, has still very considerable caustic powers, in consequence of which it is so commonly used in washing, and for other household purposes. Carbonic acid, in combining with the alkalies, does not seem able to neutralise them or destroy their caustic powers so completely as it can most other bases; and therefore it must be remembered that the carbonates of the alkalies still possess some of the powers of the alkalies themselves. The other compounds formed by the alkalies with the more powerful acids are quite neutral, and in them no traces of the caustic nature of the bases can be found. One of the principal uses of nitre is in the manufacture of gunpowder, which consists of nitre, charcoal, and sulphur, finely powdered, and very carefully mixed together. The chemical action which takes place during the burning or explosion of gunpowder, is very simple. The nitre consists of potash combined with nitric acid —a substance containing a very large quantity of oxygen, combined by a comparatively weak attraction with a portion of nitrogen. The finely powdered charcoal has a very strong attraction for oxygen, and when sufficiently heated, is able to decompose the nitre, seizing upon the oxygen of the nitric acid, and forming carbonic acid, a small portion of which combines with the potash of the nitrate, and forms carbonate of potash. The use of the sulphur in gunpowder, is similar to its use in the lighting of a common sulphur match; it very easily catches fire, and the flame thus produced instantly heats the charcoal so much, that it is able to decompose the nitre. The mechanical force of gunpowder when fired, is occasioned by the instantaneous production of a large quantity of gas from a small bulk of solid matter; as of course the nitrogen, and the greater part of the carbonic and sulphureous acids formed, are given off in the gaseous state, and comparatively but little is absorbed by the potash.

Nitre is one of the few compounds of nitric acid which are found native, and indeed it was formerly almost the only source of that acid; but of late years its use has been superseded, in consequence of the introduction of nitrate of soda, which is found in large quantities in South America, and is a much cheaper source of the acid than nitre is. Nitre is also used as a manure, and will therefore come before us again on a future occasion.

Salts of potash are met with in many plants in small quantities; they are likewise commonly to be found in the soil; and potash is by no means uncommon in stones: indeed, it is evident that the salts of potash found in the soil must have been derived from the gradual breaking down and decomposition of stones and rocks containing compounds of potash.

The second alkali, soda, is in general characters very similar to potash; it is a very strong caustic solid substance, and has a powerful attraction for acids, and is consequently never found in a pure and separate condition, but always in combination with an acid or some other substance. The most abundant source of soda is common salt, which exists in very large quantities in sea-water, and is likewise found native in the earth, when it is called rock-salt, to distinguish it from the salt obtained by the evaporation of sea-water, called sea or bay salt. The only other compound of soda which occurs native in any quantity, is the nitrate, or cubic nitre, as it is commonly called.

The "soda" of commerce is, as will be readily supposed, not the pure alkali soda, but is a carbonate, and, like the carbonate of potash, possessed of considerable caustic properties. It was formerly for the most part procured by burning sea-weed, the ashes of which contain a large quantity of carbonate of soda, and immense quantities of sea-weed were annually collected and burnt for the purpose of obtaining weed-ash, kelp, or barilla, as the crude salt was called. Of late years, however, means have been discovered of obtaining the carbonate of soda by decomposing common salt; from which it is now manufactured so cheaply, that it has not only superseded the use of kelp or barilla for all purposes where carbonate of soda is required, but has also from its low cost been substituted to a great extent for potash and pearlash, and hence the carbonate of soda, or "soda" as it is commonly called, is very largely used in the arts of glass and soap making, and other processes where an alkali is employed. In order to obtain carbonate of soda by the decomposition of common salt, it is first of all necessary to convert the salt, which is a muriate of soda, into a sulphate: this is done by mixing it in certain proportions with oil of vitriol or sulphuric acid, and heating the mixture in a furnace. The muriatic acid is expelled, and the sulphuric acid, which has a more powerful attraction for the soda, combines with it and forms sulphate of soda. The second process is to mix the sulphate of soda thus formed with chalk and pounded coal, and strongly heat the mixture in a furnace; the sulphate is decomposed at a high heat by the charcoal or carbon of the coal, and a carbonate of soda is produced, which is of course impure, containing charcoal and an insoluble compound of lime, so that by pouring water on the crude salt after being taken out of the furnace, a clear colourless solution is procured, which on evaporation yields a clean and nearly pure carbonate of soda. This "soda" contains a large quantity of water, although apparently dry; and when left exposed to the air, it does not, like the carbonate of potash, attract water from the air, but, on the contrary, parts with it and becomes drier, at the same time crumbling down to a fine powder, which is found to be less caustic than it was before it underwent this change. The reason of this is, that when the carbonate of soda, by exposure to the air, parts with a quantity of water, and consequently becomes much lighter, it at the same time combines with a second dose of carbonic acid, which it obtains from the air, and its caustic qualities become more fully neutralised than they are in the common carbonate.

The salts of soda are for the most part white, and easily soluble in water; and, like the compounds of potash, are widely diffused throughout nature. The nitrate of soda is in most respects very similar to the nitrate of potash; but it unfortunately possesses, in a slight degree, the property of attracting moisture from the air, and hence, being always damp, it cannot be used as a substitute for nitre in the manufacture of gunpowder. For other purposes, such as the preparation of nitric acid, where this property does not signify, it is very advantageously substituted for the salt of potash, which it likewise resembles in appearing to exert a powerful influence on the growth of certain plants and the fertility of the land. The sulphate of soda is also found native, and is frequently met with in mineral waters; it is also called Glauber's salts, and Cheltenham salts, as it is the principal ingredient in the mineral springs of Cheltenham.

The third alkali, ammonia, has already been before us: in its pure state it is a colourless, invisible, and very pungent-smelling gas; but, like potash and soda, it has a very strong affinity for acids, and is therefore hardly ever met with in its free state, but always in combination with carbonic, or some other acid. It is far less abundant or common than the other alkalies, potash and soda, for its principal source is the decay of animal and vegetable substances which contain nitrogen. The most important of the salts of ammonia are the carbonate and the muriate: the carbonate, which is the salt produced during the decay of organic matters, was formerly called salt of hartshorn, because it was mostly procured by burning horn; it is now, however, principally obtained from the combustion of coal, which contains a small quantity of nitrogen, and therefore during burning gives off a small quantity of ammonia, which combines with a portion of the carbonic acid formed by the burning of the carbon of the coal; hence carbonate of ammonia is always an ingredient of soot. Carbonate of ammonia is largely obtained from the refuse matters of gas-works, where immense quantities of coal being decomposed, the salts of ammonia collect in large quantity. Carbonate of ammonia possesses the peculiar pungent smell of pure ammonia, though far less powerfully. The muriate of ammonia, commonly called sal-ammoniac, which used also formerly to be obtained by burning animal substances, is now procured from the refuse of the gas-works, which contain carbonate and other salts of ammonia. They are first of all converted into a sulphate by the action of oil of vitriol, which expels the carbonic and other weaker acids, and the sulphate thus obtained is decomposed by mixing it with common salt and heating the mixture. Muriate of ammonia, like many other of the salts of ammonia, is volatile at a certain heat; that is to say, it becomes a vapour, and re-assumes the solid form when cooled again: in the process for obtaining the muriate of ammonia, therefore, it is converted into vapour by the heat applied to the mixture, and is condensed in the solid form again in the upper part of the vessel in which it is heated, which is kept cool on purpose. The uses of sal-ammoniac in the arts are numerous and well known; its principal consumers are the dyers and workers in metals.

Ammonia often seems to combine with substances for which it really has no affinity: this is merely a mechanical effect; such substances have the power of absorbing a large quantity of the gas, which is condensed or packed up in the pores of the substance, but not combined with it, and is ready to be given off again on the application of heat, or any acid. Thus charcoal, and, indeed, most porous substances, absorb or condense a large volume of this gas.

The earth, or soil, consists of a mixture of various ingredients; but the greater part of it is composed of certain substances which are called earths. Some of these are bases, and resemble the alkalies; whilst the remainder are not bases, that is to say, they seem to have no affinity for acids, and cannot combine with them to form salts. The most important of the earths which are bases are called lime, magnesia, and alumine.

Lime, in its pure condition, is a highly caustic substance, slightly soluble in water, but far less so than the alkalies are. It has a very strong attraction for acids, being even able to decompose the salts of the alkalies, in consequence of the superior attraction which it has for the acids contained in them; and it is for this reason that it is customary to mix quick lime with woodash, which contains comparatively little free potash, as the greater part is combined with carbonic acid, when it is desired to make a very strong caustic ley: the quicklime decomposes the carbonate of potash, combines with the carbonic acid, and becomes converted into carbonate of lime; whilst the potash, being no longer combined with an acid, is able to exert its caustic powers. The commonest compounds of lime are the carbonate and the sulphate; the former of these, especially, is a very abundant substance, existing naturally in immense quantities in the different forms of chalk and limestone; it is also very commonly an ingredient of the soil, and constitutes a considerable part of the bones of animals, and also shells. As we have already stated, lime has a less powerful attraction for carbonic acid than it has for any other acid; and therefore when we pour a quantity of any acid over carbonate of lime, great bubbling or frothing is occasioned by the escape of the carbonic acid, which is set at liberty when the lime combines with the new acid. This bubbling, or effervescence, as it is called, enables us very easily to ascertain whether a stone be limestone or not, and likewise whether any particular soil contains carbonate of lime; for if any acid, such as vinegar, does not occasion any effervescence, it is certain that no carbonate of lime is present; and if, on the other hand, it does expel bubbles of gas, we may be quite sure that a portion of some carbonate is present, and by far the most common is the carbonate of lime. All the forms of this substance are tasteless, and quite insoluble in pure water; but rain-water, which commonly contains dissolved in it a very small quantity of carbonic acid, has the power of dissolving carbonate of lime: hence we commonly see the surface of chalk or limestone appears gradually corroded or worn away by the rains, and for the same reason buildings of freestone or limestone are much less durable than those which are built of granite—a stone which does not contain carbonate of lime, and is, therefore, not thus acted on by rain-water. In this kind of action no chemical change is effected; the carbonate of lime is merely dissolved by water holding in solution carbonic acid; hence, when either from heat or any other cause, the carbonic acid is expelled from the water, it is no longer able to hold the carbonate of lime in solution, which is therefore deposited again unaltered.

The uses of carbonate of lime are very numerous: one of the most important is for burning into lime. This is a very curious process, for heat generally increases the attraction which two different substances have for each other ; yet in this and some other cases, it rather diminishes it, and the strongest heat is unable to drive off carbonic acid from its combination with potash or soda, though lime, which parts with it so readily when heated, is able when cold to take it from either of the alkalies. When quicklime is mixed with vegetable or animal substances, it greatly accelerates their decay ; it, however, renders the process of putrefaction far less noisome than it is under ordinary circumstances, because the lime absorbs many of the products of decay.

When quicklime is slaked with water, it crumbles down to a powder, and is found to have combined with a quantity of water ; although it appears quite dry, for the water is chemically combined with the lime : if this lime thus slaked is left exposed to the air, it combines with carbonic acid, and becomes changed into carbonate of lime, and at the same time parts with most of the water with which it had previously combined.

Sulphate of lime is less common and abundant than the carbonate ; it is however a frequent ingredient in the soil, in spring and mineral waters, and is found sometimes in large beds constituting what is called plaster-stone, gypsum, and alabaster ; these are all compounds of lime and sulphuric acid. Common plaster of Paris is dry sulphate of lime, or gypsum deprived by heat of the water which it naturally always contains, and when mixed with a small quantity of water it recombines with it and becomes a hard, dry, solid substance. The burning of gypsum to make plaster of Paris is quite different from the burning of chalk to make quicklime : in the former case the native sulphate of lime, which contains water, is heated, and the water thus expelled ; whilst in the burning of lime not only is the water expelled, but also the acid itself with which the lime was combined. Sulphate of lime is dissolved in small quantity by water, and accordingly we find it almost always present in spring-water, which derives it from the soil through which it rises ; it is the presence of this substance in spring-water which gives it that freshness which distinguishes it from common river-water, and renders it so much more pleasant to drink than soft water ; in fact, the great distinction found between hard and soft water is mainly caused by the presence or absence of sulphate of lime, which, though contained in very small quantity, greatly influences its usefulness for domestic purposes. There is only one other compound of lime of much importance, and which has already been mentioned. This is the phosphate. It is found in small quantity in many plants, and forms a great part of the solid matter of the bones of animals.—*Gardener's Chronicle.*

FARMER'S ALMANACK.—Secretaries of Agricultural Societies and Farmer's Clubs will much oblige by sending *immediately* their names and addresses with the name of their society or club, and the day of annual meeting, addressed to the Editors, 24, Norfolk-street, Strand, London.

ANNUAL GENERAL MEETING OF THE JERSEY AGRICULTURAL AND HORTICULTURAL SOCIETY.

HELD ON WEDNESDAY, 8TH SEPTEMBER.

JAMES ROBIN, ESQ., PRESIDENT.

(From a Correspondent.)

The Honorary Secretary read the transactions of the year, embodying some amendments in the rules, which were adopted unanimously.

President for the ensuing year, Major General Tougel. Vice Presidents, Captain Anley, the Very Rev. Dr. Jeune, Colonel English, R. E. Thomas, Le Breton, Esq., Attorney General, Thomas Ingle, Esq., John Durell, Esq.

At half-past four o'clock, about forty gentlemen sat down to an excellent dinner in the Royal Arsenal, where a splendid collection of dahlias had been exhibited. A beautiful seedling dahlia, raised by a distinguished amateur, Mr. Coventry, obtained the first prize.

Messrs. Saunders and Langellin, nurserymen, exhibited superb collections.

A fine collection of fruits—pines, grapes, peaches, nectarines, white figs, and black pears, monille, bouche, beurrée, d'amanlis, and graciolli. Apples—early nonsuch, early Crofton, summer golden pippin, Corstorphine, contributed by various members for exhibition, afterwards formed, as usual, a dessert fit for royalty. In this island, so justly famed for its fine fruit, the dessert alone is a sufficient attraction to engage attendance at the annual dinner.

The health of Her most Gracious Majesty the Queen was drunk with that fervour of loyalty peculiar to Jerseymen.

The usual loyal toasts were equally well received. The President's health was given in graceful terms by the Dean, and responded to with all the warmth which that worthy gentleman's punctual attention to business, and courteous and liberal habits, so justly merit, and suitably acknowledged. After the next toast, the President elect, Major General TOUGEL assured the meeting that he cordially returned them thanks for the warm manner in which they had received his health. He was grateful to the Society for the distinguished honour they had done him by electing him for the second time as their President. However unqualified he might otherwise be, at all events no one could surpass him in attachment and devotion to the Society. It had already done much, and was eminently calculated to promote the agriculture of this island ; the most casual observer must have perceived the improvement in husbandry and horticulture, since its establishment ; and though there might be a slight defection in a certain quarter, it would only tend to increased exertion within their own sphere. No one would more heartily devote himself to the interests of the Society. *(Cheers.)*

The Dean, in returning thanks for the Vice-presidents, observed, that although he was not practically conversant with agriculture, he was fully persuaded that whatever advantages empires might derive from manufactures or commerce, the true source of the wealth of a nation was in the proper culture of the soil. *(Cheers.)* He regretted that a defalcation might possibly take place in the funds, but he assured the meeting that he was so convinced of the utility of the institution, that he would cordially offer it his support here and elsewhere. (*Cheers.*) We regret that the distance we were at prevented our collecting the whole of this effective speech, which was loudly cheered.

Colonel Le Couteur, on proposing the Jersey Agricultural and Horticultural Society, observed, that eight years having now elapsed since the formation of the Society, time and experience had demonstrated its utility. It was with extreme concern that he perceived the states might possibly withdraw their grant; quite certain was he that it had returned, not a tenfold, but an hundredfold benefit to the cultivators of the soil, not in husbandry alone, but by horticulture to the markets also. He was not concerned for the sum merely, but that the states withdrew their countenance from cottagers and small farmers, and from the encouragement of husbandry. The Society was grateful for past benefits, and had been faithful stewards to that grant. They had conscientiously distributed it in furtherance of the objects recommended by the act. The states would certainly not withhold the allowance for the bygone year, as they would otherwise deprive persons who had gone to some expense to compete for their premiums, of money and a distinction which they had justly earned. This was no party society. If on public grounds the public purse was to be spared, it was assuredly a reason why private subscriptions should be increased. He would tell those who are lukewarm to this society, to look back ten years. The land foul with weeds, crops inferior, liquid manure wasted, the market ill supplied. What had been effected? In cattle, beauty of form and flesh had been added to milking and creaming qualities. More cattle had been decorated this year than on any previous occasion; and the breed had so greatly improved, that many of the animals rejected for having less than nineteen points, would have been prize cattle when the Society was formed, so well were their merits now understood. The price of cattle had fully doubled; this led him to call the attention to one important change. The board of management had found it difficult at times to get cattle dealers to act as judges; besides it was a question whether there might not be an interest in keeping back the points. Seven years being a full apprenticeship in any business, it was conceived that many of our farmers having now given constant attention to the points of their cattle, there were numbers who could act as judges for horned cattle quite as well as others judge for horses; and the event has verified the expectation. The usual precaution of making members of the eastern district judge for the western, and *vice versa*, has insured impartiality, and established confidence; ample justice has been done after the most patient investigation. In farms and crops what improvements have not taken place since premiums have been given for their successful culture? Wheat crops are to be seen select and pure; new green crops, such as mangel-wurzel, varieties of turnips, white carrots, and artificial grasses, now offer fresh resources for maintaining cattle through the winter. In the branch of horticulture too, a very intelligent person conversant with the art, long absent from the island, observed to him, "What a striking improvement was perceivable in the admirable supply of vegetables, fruits, and even flowers, now daily in the market." To what due in a great measure? To the premiums given to that excellent and industrious class of persons, the cottagers and market gardeners —extended also to those more scientific individuals, the very intelligent nurserymen of our island. Are these trifling benefits conferred on society at large? The states' grant has been chiefly bestowed on these latter class of persons; and well would it be for St. Helier's and its residents, were it continued. He however hoped that whatever necessity the society might see to confine its premiums to its own members, these excellent persons, whose gardens had been so often visited and found in such admirable order, would be exceptions to the rule, and would continue to receive all the encouragement the society could afford them (*cheers*). But in truth, the society itself would be a gainer by losing the grant—the loss would be to the public. The board has latterly felt fettered by the caution it took to distribute the grant —by an over anxiety faithfully to administer its trust. The society will be free, and more subscriptions have already come to its support (*cheers*).

The hilarity and convivial mirth of the meeting was enlivened by many excellent and appropriate songs, and was kept up until nine o'clock, when it broke up.

ON THE CORN LAWS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—As you have adverted to the corn laws in your paper of this week, and admit the probability of further legislative enactments being made by the present government, I hope I shall not as a practical farmer be considered out of place by offering the following suggestions to your notice; and by thus introducing the subject to your readers, I may elicit observations from others that may tend to show the operation of the present law as affording protection, and also how far any alteration may affect the interest of the tenant farmer; as to him would the effects of any alteration be beneficial or injurious, inasmuch as the diminishing the amount of produce by any future enactments would mainly fall upon him.

I shall therefore in the outset premise that the laws that regulate importation are made for the *protection* of the agricultural interest; and with that principle admitted, I submit the following as the preliminary heads under which I shall treat the subject.

1st. That it is the duty of every government to protect the industry of its own country.

2nd. That it is also a duty to render it as far as possible independent of other countries.

And 3rdly. That as the climate, soil, adaptation, capital, and taxation are different in every country, so must protection vary in amount respectively.

In England it has always been the policy of the government to protect the industrious classes, by imposing duties upon foreign manufactured articles and produce, if not amounting to a prohibition, yet so far enhancing the price of the same by the duties so imposed, that they shall be prevented coming into competition with the productions of this country; and as the amount of taxation is greater in this than in any other country (which taxation is mainly supported by the land and the producers from the soil), the parties interested as landlords, tenants, and labourers, are entitled to such fair protection by the legislature that will ensure them from the home consumer such a price only as will fairly remunerate them for their skill, interest upon capital, and expences attendant upon production. With these premises settled, it will be my endeavour to show to what extent that protection is required, how it can be afforded, and in what manner it can be best ensured, without being made liable to the fluctuations that have been continually operating since the manufacturing interests have arrayed themselves against it.

1st, as to the landlord's interest or rent. Whatever agreement may be adduced to the contrary, the soil has from time immemorial, either by right of consanguinity, bequest, or purchase, in this, as well as in all other European countries, become a vested property, yielding precedence to none, and liable at all times to be taxed for the maintenance of the state, the church, the poor, the highways, and the county expenditure; and is transferable from one owner to another without diminution of these incumbrances, the amount of which depreciates the value in a greater or less degree, exactly as the greater or less expence of cultivation increases it; the rent being only that portion of expence which the cultivator agrees to give for its use, or in other words is *what remains of the amount of produce* after all the expences of cultivation, taxes, interest of capital employed, and remuneration for skill are deducted.

2ndly. As to the tenant's interest. As the soil is vested in the landlord, so on the other hand the capital necessary to cultivate, and the skill to conduct the cultivation, are vested in the tenant, who has an equal right with the manufacturer to a fair remuneration for the use of his capital and skill employed, as to entitle him to equal protection by the legislature; and as capital, varying from one-fourth to one-third, or even one-half of the value of the fee simple of the land, is necessary to be invested to enable the tenant to make a beneficial return from the soil, which investment can only be regained by the tenant, by allowing him the use of the soil for a term of years, secured to him by leases or agreements from the landlord; so it is equally necessary that confidence should be ensured him by the legislature, so as to enable him to invest his capital with security, and that certainty of protection as to allow him to calculate, before making any permanent investment, how far he can probably expect to reap the benefit from the soil that such investment ought fairly to produce; and if any great change is contemplated by the legislature, it ought in justice to him to be made to be so long coming into operation, as to allow him again to obtain from the soil the whole of the outlay that he may have been induced to make upon the faith he had in the government at the time.

3rdly. As regards the labourer. Here we have an unprotected individual who has nothing but his strength for his dependence, his labour being his only disposable article that he has to sell, and whose avocation and powerless situation prevents him interfering with government to claim his just rights, but whose dependance is placed in the occupier, to whom he looks for an equitable return for his labour; and it is equally the duty as well as the interest of both the landlord and tenant to protect him from oppression, and to requite him fairly and justly for his labour, bearing in mind that he is a subject of the state, having equal rights with themselves, and paying, as he does indirectly, as great an amount of taxation as any other person, but, from his situation and inability, entirely dependant upon them for protection.

The points then necessary to ascertain are, what is the fair amount of remuneration that each class is entitled to? First—as respects the landlord, or rent; second—as respects the tenant, as capital and skill; and thirdly—as respects the labourer or labour. To find the proportion to which each is entitled; to fix that proportion, and having fixed it, to find the minimum point of protection, so that the landed interest may be protected, and the manufacturing interest and consumer be least injured.

The value of land, like every other marketable article, or any other investment, depends upon the amount of interest it will produce to the purchaser as an investment; and notwithstanding the low rate of interest derived by the mere investment of money in the public securities, it will be found that the value of land is always influenced by the fluctuations, and therefore dependant upon the value of money; and the relative values of the two will always be the same, according as the security of the one is to that of the other: for instance, the depression upon farm produce in Essex was such in 1834, as to render land not worth more than from 24 to 25 years purchase. In 1840, it had increased to 28 years purchase; this difference arising from two causes—the decreased value of money, and increased demand for land: and so long as land is a marketable article, so long also will its value be increased or decreased by such fluctuations.

The proportion that rent bears to produce must always fluctuate. Rent in ordinary cases upon arable land, amounts to about one-fifth part of the whole amount of produce; horse and manual labour, two parts; mechanics, taxes, tithes, rates, seed, corn, wear and tear of implements, a fourth part; interest of capital employed, and skill of the tenant, a fifth part; but on some descriptions of soil, the expense of cultivation is so much increased, that the rent may be diminished to one-eighth; or, as is mostly the case upon portions of farms, and even of districts, whilst other portions may be worthless—that is, the expense of cultivation of grain crops may so much exceed the amount of produce, as to render it valueless; and as protection is withdrawn, and the value of produce decreases, so the land next inferior in quality becomes also valueless, and so on until the most fertile descriptions will remain to be cultivated. It is therefore important for the legislature to make such a proper estimate of these matters, as to fix the amount of protection at such a point, that the interests of the agricultural community may be protected—and protected only upon such lands as will make a return fairly of the expences; leaving the rent to follow proportionably with their greater or less fertility.

The tenant's capital employed is also equally varied by circumstances; the ordinary capital requisite in the eastern counties, (and in which I am most interested) varies from 7*l*. to 10*l*. per acre. On the light turnip, thin marl, and chalky soils, expense of horse and manual labour is materially diminished; whilst upon the heavy clay lands it is greatly increased, and perhaps no better illustration of it can be given, than by comparing the sum required to maintain a plough, with the number of them required upon 100 acres. On light turnip and marl soils, four horses are considered requisite, the average cost of which, with the ploughs and harness, will not exceed 100*l*., or 1*l*. per acre; the maintenance about as much more, and the duration about 10 years: whilst upon strong clay lands, it will require more than double that amount, the maintenance 50 per cent. more, and the duration diminished 25 per cent. And with manual labour, the same proportions will follow according to quality and situation; and although the fertility and produce may be increased in a proportionate degree, it will as a consequence follow, that those lands requiring the most labour to cultivate, will be the first to suffer from a diminished price of produce, and will at all times, and under all circumstances, afford the least amount of rent: and it is upon soils of this description, that investment of a greater capital becomes imperative upon the tenant to ensure success in his occupation. In many instances that have come under my notice the current expenses of the first year by the fallowing, chalking, and draining heavy clay land, has exceeded 15*l.* per acre—and this upon the security only of a fourteen years' lease, and liable to all the fluctuations produced by the continual agitation of the corn laws; and such is the hazardous return of the capital so invested, that it is only in the confidence that exists, (and I am proud to say, does exist between the landlord and tenant) added to the enterprise of the latter, and the honourable pride that attaches to the high cultivation of the soil, that induces him frequently to invest his capital to the last shilling—placing as it were his property in the hands of parties who may at the time be at the helm of public affairs.

Assuming, therefore, that the average produce of wheat is 26 bushels per acre, that the average quantity of barley and oats is 5 qrs., that the average quantity of artificial grasses, beans, and peas, &c., is 4*l.* per acre, and turnips are equal to 1*l.* 10s. per acre, and that the amount of each is rendered upon the four-course system in every fourth year, the produce will stand thus:—

	£	s.	d.
3 qrs. 2 bush. Wheat, at 60s.	9	15	0
5 qrs. Barley and Oats	7	5	0
Beans, Peas, and Grasses	4	0	0
Turnips	1	10	0
	22	10	0
Or, per acre per annum	5	12	6

	£	s.	d.
Rent and Land Tax	1	2	6
Labour, Horse and Manual	2	5	0
Seed, Implements, Taxes, Rates, and Tithes	1	2	6
Interest, skill, &c.	1	2	6
	5	12	6

Upon the above calculation rent is 22s. 6d., which I presume to be about the same as paid in Essex. Labour 12s. per week, or to a family of five, of from 35*l.* to 40*l.* per annum; and I take this opportunity of showing the landed interest, that if the rent is increased beyond its fair proportion, that then the occupier or labourer, or both, must suffer in exact proportions; and if the occupier invests a greater amount of capital than in ordinary cases, he alone is entitled to the remuneration arising therefrom, the labourer also participating, so far as the quantity of labour has entered into the investment.

We now have to consider what amount of protection should be afforded by the legislature, so that the consumer or manufacturer shall not be compelled to pay more than the necessity of the case demands.

It will be needless to enter into detail of the actual expences of cultivation, as indeed it would be impossible to do so with any degree of accuracy, except as to the proportion that they bear to the whole amount of produce; and as I have shown the relative proportions of rent, labour, tax, and profit with wheat at 60s., and at that price have shown the rent to be no more than 22s. 6d. per acre, equivalent at the present moment to about 31*l.* 10s. per acre, it must appear that, if the produce is reduced in value 20 per cent., then the rent should be 18s. only; but the amount of rent charge, rates, and taxes will not be consequently diminished, but probably increased; and this being the case, the deficiency arising having to be met, will in all probability be subtracted from the labourer, either in weekly amount of earnings, or in weekly amount of labour upon the farm; and this becomes the more imperative upon the occupier to enforce, as in all probability the amount of rent will not be diminished until the expiration of the lease has taken place. Having therefore assumed 60s. as the fair equivalent to the tenant, with rent at 22s. 6d., and labour at 12s. per week, the next consideration will be how far it will affect the consumer.

It has been ascertained that 4 qrs. of wheat at 60s., at a cost of 12*l.*, will produce in amount of bread nearly 18*l.*, being 50 per cent. increase upon the price of the flour, either as profit or in the expense of manufacture: this increase of expense to the consumer would apply in greater proportion upon flour as the price of wheat diminished, as was proved during the depression, under the low prices of 1835, when the quartern loaf fell to 6d., with wheat under 40s. per qr.; but with wheat at 60s., 8d. was generally obtained for a loaf of the same size.

With bread at this price, great distress was experienced both by the labourer and the agriculturist. At 8d. a fair profit was obtained, and therefore taking the one sum as the maximum, and the other as the minimum, the average price of the loaf may be taken at 7d., with wheat between 40s. and 60s. per qr.; but when at that price under the existing state of taxation, it will barely leave the tenant any profit. Assuming, therefore, that 7d. is the price to the consumer, and at that price no profit remains to the occupier, it will be right next to enquire how far an increase of 1d. per loaf will affect the amount of wages to be paid the labourer as regards the article of bread alone? I find that families consume about half a peck of flour to each individual, and taking the average of a family at five in number, the difference between the two prices will be equivalent to 10d. per week; but whether it shall amount to that, or half as much more, will make but little difference in my calculation; for if the extremes of price produced by wheat at 40s. or 60s. per qr. be taken, it will not exceed 1s. 8d. per week, and not more than 6d. to an adult, admitting that he consumes three loaves per week.

My intention will be next to show how prices may be equalized, so that the speculative character of the present bill may be averted, and how the farmer can be protected with the least injury to the consumer.

As the act is professedly made for the express purpose of protection to the agriculturist, still it should be based upon a principle of justice to all parties; and as the present mode of taking the averages is open to chicanery and fraud, operating both to the injury of the consumer and producer, a better system might be introduced to supersede it, by requiring the return to be made upon the first sale of corn, and not upon the last, after the expences of freight, carriage, wharfage, factorage, &c. have been incurred, whereby a fictitious value becomes substituted, and opening a channel for the fraudulent practice of making sale returns many times over, upon the samples of the finest wheat, and thereby force up the price beyond its natural level; thereby to influence the averages by which the importation is governed. And it is submitted that a mode might easily be established, as an improvement upon the present one, to effect which it would be only necessary to furnish purchasers of wheat with printed forms, to the effect that A. B., the grower, sold C. D., the purchaser quarters.

at s. per qr.; the date to be inserted, and the signature of both parties attached, and then transferred to the hands of the inspector by the purchaser, as is usual in the present instance.

In the next place, the duty to be attached should be progressive with the scale of averages, and be declared every week upon the average of the last six weeks; the duty to be so adjusted as to give the grower protection at a point assumed to be between 50s. and 60s. per qr., amounting to a prohibition at 40s., and to vanish at 72s., and so on in proportion.

If a fixed permanent duty should ever come into operation, it will produce so great an influx of grain upon the market, that prices must inevitably fall far below the point contemplated; and, although it may not be apparent at first sight, still every one conversant with business knows that supply and demand govern the price of every article of production; and if, by any means, a supply so great shall be thrown upon the market, that supply will have a tendency to depress the price of the whole amount so long as it shall exceed the demand, and thus prices will consequently range far below the point contemplated, and which it was supposed the duty would have secured to the grower. Under the late bill of 1817, when prices had reached a maximum, the ports were opened for three months; and during that period sufficient wheat was introduced to bring down the marketable value so low as to become ruinous to the grower, which, operating upon the market for eighteen months afterwards, thus reduced the value of the whole mass. Whatever may be stated to the contrary, no system of protection can be better framed to secure the object than that which adapts itself to the exigency, and, like the valve to a steam engine, ensures safety to all parties. Upon wheat at 40s., an 8s. duty would be nominal, and have no effect in securing the protection sought by the grower; whilst, with wheat at 70s., it would further increase the price to the consumer by adding to the prices already high, and thus increase the evil when most requisite to relieve it.

It cannot be expected that any duties can be imposed so as to preserve wheat at any fixed price; but sufficient benefit will be obtained if it confines it within a certain range, so as to afford protection to the farmer without inflicting injury upon the consumer. That this may be easily accomplished is most certain; but whether Sir Robert Peel may decide otherwise or not, remains to be shown: but whatever course he may adopt should be watched carefully and assiduously, to see that a fair protection is afforded.

One of the objectionable points in the present scale is, that the duty does not rise and fall progressively with the price of wheat; but goes, as it were, by jerks, giving an uncertainty to the prices in the market, producing great fluctuations, and causing speculation to a degree unheard of in any other branch of commerce.

As to the manufacturer finding a greater vent for his articles upon the continent under a fixed duty rather than under a sliding scale, is a fallacy that does not require any trouble to disprove; for, admitting that a free trade was opened for wheat, still it would not be imported except for the purposes of food; and for every quarter introduced by the foreigner, over and above the supply now found adequate for the consumption, a quarter less would be grown in this country, by allowing the lands of inferior quality to go out of cultivation; and, therefore, every quarter introduced by the foreigner (admitting it all to be obtained in exchange for articles of manufacture) would diminish the consumption of the home customer in the same proportion, and would not, consequently, produce any beneficial result to the manufacturer further than by producing a consumption abroad of that which otherwise would be consumed at home.

As to the reduction, if any, that might be effected in wages by a reduction upon the price of bread, I have shown that every penny upon the loaf is equivalent to 2d. per head in wages, or 10d. to a family of five persons; a sum so trifling when brought into competition with the price of articles produced principally by machinery, that it must be obvious from this source the manufacturer cannot be materially benefitted.

The consumption by the home customer very far exceeds that of the foreign one; and it would appear to be an act of great inconsistency on the part of the manufacturer, to give up the one without having any probable certainty of obtaining the other. If, as has been shown, it is the interest of both parties that such a price shall be afforded the grower as will be requisite to afford protection only, it is also equally the interest of both parties that the question shall be discussed fairly and dispassionately, without having recourse to the bickerings and excited feelings that have hitherto marked the progress of the investigation. Two interests so great as the agricultural and manufacturing of this country are, cannot exist without support and assistance from each other; and whatever may be asserted to the contrary, it is certain whenever the downfall of the one shall be effected, that of the other will in a short time inevitably follow. We have been told that wages will not fall with the price of bread, but if we can judge from the consequences that followed the fluctuations after the termination of the late war, we shall find that such was the effect of low prices of produce upon labour, that it was then reduced fully 30 per cent., the average wages paid from 1820 to 1835 not exceeding nine shillings per week, whilst at the present moment it is 12s.: and it happens that as the inability of the farmer to employ increases, so the demand for labour decreases; and these effects operating together, have a tendency inevitably to reduce the price of labour to the lowest possible point, and in as much as all other payments from the farm are imperative upon the tenant, the only part upon which he can reduce his expenditure, is upon that of manual labour, as I have shown in a former part of my letter.

At the same time that I urge the necessity of the agriculturists narrowly watching any proceedings that may take place upon this, to them, most vital question, I would also recommend that no factious or selfish interference be allowed, as it is evident from the opinions of the best informed persons, that considerable alteration in the present system of corn laws is requisite; for notwithstanding the discussion that has taken place, no remedy has been suggested whereby the speculative character of the bill may be got rid of; and this has arisen from the apprehension upon the side of the agriculturists that any alteration that may be effected, will have a tendency to destroy the present protection altogether. This may in part be true, but, pledged as Sir Robert Peel is to the principle of the present bill, it can hardly be expected that he will attempt any thing further than that of remodelling the objectionable portions of it, and thus place it upon such a basis, that if it shall not ensure the protection at so high a point, still that it will afford such protection as may be calculated upon as permanent, and thus offer to the agricultural community a certain and sure investment of capital, and ensure them from the continual interference of the legislature upon the subject.

In conclusion, allow me to apologise for the length at which I have trespassed upon your columns. As a tenant farmer only, my property has become invested in the cultivation of the soil, and although the laws affecting the price of corn may be so far altered as ultimately to benefit the community, still it is a duty that I owe myself, my family, and brother farmers, to see that our property and interests are not sacrificed to gratify a faction who appear banded against the landed interest; for, under whatever changes may hereafter take place, their acres, however much depreciated, will remain; whilst every portion of the property invested in the cultivation will, by any sudden changes that may take place, be wrested from us. Acting under these impressions, and having the welfare of my brother agriculturists as well as that of the labouring community sincerely at heart, will, I trust, plead a sufficient excuse for my treating the subject so much at length as I have found necessary, and which I hope will be excused.—I remain, Sir, your most obedient servant, ROBT. BAKER.

Writtle, Essex, Sept. 16.

SALE OF BLOOD STOCK, &c.

The undermentioned blood stock were sold at Doncaster during the race week.

BY MESSRS. TATTERSALL AND SON.	Gs.
Chesnut yearling colt, by Jereed, out of Liberty, by Langar; engaged in the Derby, 1843	50
Bay yearling colt, by The Mole, out of Teresa, by Langar; engaged in the Derby, 1843	125
Bay yearling colt, by Memnon Junior, out of Shoehorn (the dam of Granby, Esmeralda, &c.)	63
Chesnut yearling colt, by Memnon Junior, out of Manilla, by Mulatto; no engagement	43
Bay yearling colt, by Jereed, out of Gannymede, by Mulatto—Stamford; no engagement	76
Bay yearling filly, by Jereed, out of Abigail, by Mulatto, out of Shoehorn; no engagement	39
Bay yearling filly, by Liverpool, out of Wild Rose, by Confederate; engaged in the Oaks, 1843	49
Brown colt, 2 yrs., by Muley Moloch, out of Manilla, by Mulatto; engaged in the Derby and Leger, 1842	72
Bay colt, 2 yrs., by Liverpool, out of Teresa, by Langar Lady of The Tees; engaged in the Derby, 1842	105
Chesnut mare (Velocipede's dam), by Juniper, dam by Sorcerer; covered by Voltaire	100
Francesca, a brown mare, by Partisan, dam by Orville; covered by Voltaire	100
Velocity, a bay mare, own sister to Velocipede, by Blacklock; covered by Sheet Anchor	210
Copere, a chesnut mare, by Velocipede, out of Quadrille; covered by Sheet Anchor	105
Emineh, a chesnut mare, by Sultan, out of Velocipede's dam; covered by Voltaire	200
Gipsy, a bay mare, by Tramp, dam (Calypso's dam) by Orville: covered by Voltaire	300
Chesnut colt, by Velocipede, out of Guerdon, by Tramp; engaged in the Derby, 1843	125
Bay yearling colt, by Sheet Anchor, out of Lady Fulford, by Walton; engaged in the Derby, 1843	59
Bay yearling colt, by Sheet Anchor, dam, Forget-me-not; engaged in the Derby, 1843	32
Black yearling colt, by Sheet Anchor, out of Lilah, by Blacklock; engaged in the Derby, 1843	125
Bay yearling colt, by Sheet Anchor, out of Valencia, by Cervantes; engaged in the Derby, 1843	37
Bay yearling colt, by Sheet Anchor, out of Erin Lass, by Hollyhock; engaged in the Derby, 1843	22
Bay yearling filly, by Sheet Anchor, out of Medea, by Whisker, engaged in the Oaks, 1843.	33
Bay yearling colt, by Langar, dam by Blucher (Emigrant's dam); engaged in the Derby, 1843	250
Bay yearling filly, by Langar, out of Barcelona, by Cervantes; no engagement	40
Brown yearling filly, by Jereed, out of Gazelle, by Tramp; no engagement	21
Dolphin, 5 yrs. old, by Priam, out of Mermaid, by Whalebone; covered by Sheet Anchor	110
Mermaid, by Whalebone, her dam, Miss Emma, by Walton; covered by Sheet Anchor	175
Ermengardis, 3 yrs. old, by Langar, out of Ermine, by Whisker; covered by St. Martin	110
Parthion, a bay yearling colt, by Jereed, out of Cyprian; engaged in the Derby and the great stakes at the Hippodrome, 1843	500
Prizefighter, a chesnut yearling colt, by Gladiator, out of Barbara; engaged in the Derby, 1843	250
Napier, a chesnut yearling colt, by Gladiator, out of Marion; engaged in the Derby, 1843.	300
Abraham Newland (foaled in 1834), by Malek, out of Rachel; he covered this season	200
Vestment (foaled in 1831), by Longwaist, out of Dulcamara; he has covered two seasons	99
Viola, a brown mark, by Filho da Puta, dam, Moselle, by Chateau Margaux; covered by Hornsea	75
Octavia, by Walton, out of Marcia, by Coriander, &c.: covered by Voltaire	59
Adriana, by Comus, out of Young Petuaria, by Rainbow, &c.; covered by Voltaire	125
Grey mare, by Comus; covered by Physician	23
Grey mare, by Cervantes; covered by Physician.	200
Chesnut mare, by Priam; covered by Physician.	99
Black mare, 5 yrs. old, by Vanish, out of Hylda	40
Grey gelding, 4 yrs. old, by Akarius, dam by Cervantes	179
Bay gelding, 4 yrs. old, by Priam, out of Dorabella	50
Bay gelding, 3 yrs. old, by Mundig, out of Adriana	65
Chesnut colt, 2 yrs. old, by Langar, dam by Cervantes	153
Bay filly, 2 yrs. old, by Bay Middleton—Adriana	16
Grey yearling colt, by The Saddler, dam by Comus	60
Bay yearling filly, by Bay Middleton—Adriana.	45
Bay yearling filly, by Akarius, out of Octavia	15
Bay colt foal, by Physician, out of Octavia	46
Bay colt foal, by Muley Moloch, out of Adriana.	65
Chesnut mare, by Bolero; a superior hack	65
Vesper, by Velocipede, out of Crazy Jane	63
Black filly foal, by Muley Moloch, out of Vesper	9
Saltarella, by Stumps, out of Catharine	100
Bay colt foal, by Physician, dam by Capsicum	50
Bay mare, by Partisan, her dam by Trumpater	29
Brown filly, 2 yrs. old, by Muley Moloch	110
Bay yearling colt, by Gladiator	50
Black yearling colt, by Voltaire, out of Saltarella	150
Brown yearling gelding, by Gladiator, out of Vesper	25

WINCHCOMB FARMERS' CLUB.—PLOUGHING MATCH.—In the month of May, 1840, Edward Holland, Esq., of Dumbleton Hall, in this county (with that kind attention to the improvement and interest as well as good fellowship of his neighbourhood, for which he is so deservedly respected and beloved), interested himself in establishing a "Farmer's reading and debating club," to hold monthly meetings in the town of Winchcomb; and under his patronage it has progressed so favourably as to contain 50 members, composed of noblemen, yeomen, and farmers of the Winchcomb district. The trifling subscription of 5s. each, aided by liberal donations, has, we see by the first annual report of the managing committee, enabled them to form a permanent library for the use of the members, consisting of several of the best standard works on farming, as well as the agricultural publications and periodicals of the day. At the anniversary dinner, which took place on the 29th of May, and was exceedingly well attended, a list of interesting agricultural subjects was fixed on for discussion during the next year, and various sweepstakes for a show in December of the best samples of corn, turnips, &c., were likewise proposed and filled. Arrangements were also made for ploughing matches, to be held alternate years in the hill and vale district. The first trial of skill took place on Friday, the 17th ult., in a piece of old seeds on the farm of Mr. J. Smith, of Forde, when 14 ploughs were brought into competition, and the premiums were awarded by the judges as follows:—

	Ploughman.	Owner.	Time.
Class I.—*Pair of Horses without Driver.*			
1st Prize	Joseph Harvey	Mr. F. Taylor	2h. 48m.
2nd do.	Charles Staite	Mr. H. Lane	2 41
3rd do.	Thomas Shillham	Mr. H. Lanc	2 40
Class II.—*Four Oxen.*			
1st Prize	William Creese	Mr. F. Taylor	3 5
2nd do.	Rich. Boughton	Mr. J. Smith	2 57
3rd do.	William Davis	Mr. H. Lane	2 33
Class III.—*Three Horses with Driver.*			
1st Prize	William Wale	Misses Talbot	2 42
2nd do.	Rich. Boughton	Mr. J. Smith	2 22
3rd do.	Frank Edwards	Mr. E. Wood	2 43

The quantity ploughed was half an acre, and the time allowed was three hours and a half. The work was very creditably done, but it was exceedingly difficult to convince the ploughmen that speed was not the grand object, instead of superiority of ploughing, so that in some cases the half acre was completed in two-thirds of the time allowed. Experience will, however, correct this mistake. The amount of the sweepstakes was divided according to merit amongst the successful competitors, and a subscription raised for those who were unsuccessful; so that all departed home after an exciting holiday, grateful to their masters, and emulous to take the field again in friendly rivalry the next opportunity afforded them. About twenty gentlemen afterwards dined together at the Plough Inn, in the village of Forde. During the evening, more than twenty names were entered for next year's ploughing match, and all expressed themselves highly gratified at the success of the first meeting. On Saturday, the 4th inst., the subject for discussion by the club was—"On the varieties of apples most suitable for cider, and the best method of making and managing the same;" and an essay was read by the chairman (Mr. Holland), contributed by Mr. Richards, of Dumbleton, a gentleman celebrated for the excellence he has attained in producing that liquor in the very highest state of perfection.—*Gloucester Journal.*

AN IMPORTANT EXPERIMENT.

HARVEST WORK WITHOUT STRONG DRINK.

There are not, we believe, any classes of men amongst whom prejudice against teetotalism more generally prevailed than amongst farmers and their labourers. It was deemed absolutely impossible to get through the heavier kinds of harvest work, such as mowing and reaping, &c., without a very liberal supply of stimulating drink. We have witnessed one strong-hold after another abandoned by the advocates of strong drink, and it is now with feelings of the most lively satisfaction that we give insertion to the following most interesting communication from an agricultural correspondent who has done more to promote our cause amongst his brother agriculturists than probably any other person in this part of the kingdom. It will be seen that he has been completely successful, and we cannot but indulge the hope, that both masters and men will ere long adopt a practice which is so remarkably caculated to promote their welfare every way.

"Notwithstanding the *Herald* and other publications on the side of total abstinence, have, from time to time, furnished evidence of the fact that intoxicating drinks are not necessary to the agricultural labourer, even during harvest, yet, most acquainted with the country, must know that farmers generally, and their labourers, adhere to their old opinions and practices; and, so far as my observation goes, they urge as objections to our system,—1st, That the labour required of agricultural workmen, in summer, and at other periods of the year, cannot be performed without the use of intoxicating drinks. 2nd. That if these drinks could be dispensed with, no suitable substitute could readily be found. And 3rd, that any equally good substitute would be more expensive than the drink it superseded.

I have, during the present summer, put these several objections and the system of total abstinence, itself, on trial with my labourers, and if thou thinkest the following facts at all calculated to assist our cause, I shall be pleased by thy giving them a place in the Herald.

On a farm which I occupy several miles from my residence I have for several years had the mowing, harvesting, and stacking of the hay there, done by labourers at 8s. and three gallons of cider per acre, together with the occasional assistance of the man on the farm, being equivalent to 8s. 6d. an acre, and the drink. Last year I also let my hay harvesting at home, of 70 acres, to six other labourers at the latter-mentioned terms. During the past spring I came to the determination not to pay for any labour with intoxicating drink, and on acquainting the party who again applied to undertake the mowing, &c., on the distant farm, of this, he asked three shillings per acre, instead of his accustomed drink, which, being about the usual price, I consented to give, leaving him at liberty to purchase such drink as he pleased.

On the home farm, I let eighty acres of grass to mow, harvest, and stack, to four of those who did the like last summer, with three others, at 8s. 6d. an acre in money as last year, and instead of 3s. an acre, for drink, an equal sum to be expended in the purchase of intoxicating drink and food, on condition that neither of them should taste any fermented liquor during the progress of the work. Three of the men had signed the pledge in the previous winter, the other four did so about a fortnight before they began the work.

They commenced on the 10th of six mo. (June) and finished on the 26th of the next month which was longer by two weeks than they would have been had the weather proved fine. The whole of the work, without the least exception, was performed more to my satisfaction than ever was the case before. During the progress of it, they gave abundant proof that they were equal to as much work of any kind as any seven men in the neighbourhood, and also to as much as they themselves had been equal to at any time whilst taking intoxicating drinks. They were not picked men; four of them of about the respective ages of 55, 41, 30, and 29, having worked for me for several years; the other three, aged about 41, 30, and 20, having been engaged at various times in the spring, without any intention of retaining them during the summer, and that they are not of more than average strength may be inferred from the fact that I was told before they began. "We know very well how your experiment will end, for there are but two men out of the seven that can do a day's work; they will be knocked up before they have mowed two hours." At the end of the first day's mowing it was, however, found that they had done more than any other men in the neighbourhood; and as they thus proceeded without being 'knocked up,' the tables were turned, and I was then told that they performed so well in consequence of their good living. How this was obtained, I propose presently to show, but before doing so, I must, in justice to the men, add, that their conduct during the summer has presented a striking contrast to much that I have witnessed in ale and cider drinkers. I have not heard an improper expression escape either of them during the whole period, and their general behaviour has been very creditable.

Instead of intoxicating drink they used tea and cocoa, sweetened with sugar or treacle, and skim milk, supplied by myself. The following are the quantities used, with the cost, viz.: 2 lbs. of tea, 22 lbs. of cocoa, 31½ lbs. of sugar, 4¾ lbs. of treacle, and 60 gallons of skim milk—all of which cost 3*l.* 12s. instead of, as at the rate of last year, 12*l.* My object being to carry out a great principle, I consented to their beverage being made on the premises, but they might easily have provided themselves with a supply for the day at their respective homes before coming to work.

The required supply of drink, having as above shown, cost but 3*l.* 12s., there remained 8*l.* 8s. to expend in food, and for 1s. more than this sum, or 8*l.* 9s., they were enabled to procure the following, viz.:—*one hundred weight of beef, one hundred weight of bacon, four sacks of potatoes, and one sack of flour, with 20 lbs. of suet for puddings, all of which "good living," be it remembered, was obtained out of the saving effected by the substitution of an unintoxicating drink for the intoxicating and expensive one of the previous summer.*

It appears to me, that the foregoing facts furnish the best practical answer that can be given, to the prevailing objections urged by farmers and others as stated in the early part of this letter. Further comment is needless, and I would leave it to the stoutest advocate for the use of intoxicating drinks, to say, whether the system thus adopted is not far better even for the labourer than the one it superseded.

The following case furnishes a melancholy contrast to the foregoing:—A labourer of the village in which I reside, who has frequently been the victim of intemperance, came to my house in the spring, and asked to be allowed to sign the pledge of the society; he did so, and for some time adhered to it, expressing himself pleased with the act. He was in the employ of a master altogether opposed to total abstinence; he was put to mowing with two other men equally opposed to it—he was tempted—drank—became again a victim to his old propensity, and for some weeks has been seen going about with his head tied up in consequence of an injury of the lower jaw received in a public-house quarrel.

Thine, &c., JOSIAH HUNT.

Almonsbury, 8*mo.* 14*th*, 1841.

REVIEW.

THE FARMER'S ENCYCLOPÆDIA.

BY CUTHBERT W. JOHNSON, ESQ.

Longman and Co. Part 1.

We have perused with unalloyed satisfaction the first number of this publication, and have no hesitation in stating that it will become one of the first if not the best of our standard works on British agriculture. It is at once most important and most difficult to know where, amongst all the treaties and publications upon agricultural subjects, at the instant to find information on any particular subject. The Farmer's Encyclopædia will remedy this difficulty by arranging that information in alphabetical order. Do we want the definition of a term, the history of any animal, the description of any seed or implement, the biography of any celebrated agriculturist, in short any information upon any agricultural topic or subject, we may find it in a moment. In fact this work will be an agricultural library in itself, and will add to Mr. Johnson's already well acquired reputation as an agricultural writer.

ILLUSTRATIONS OF THE BREEDS OF THE DOMESTIC ANIMALS OF THE BRITISH ISLANDS.

BY DAVID LOW, ESQ., PROFESSOR OF AGRICULTURE IN THE UNIVERSITY OF EDINBURGH.

London: Longman, Brown and Co.

The tenth number of this valuable and finely executed work contains a description of the classes of British horses, with portraits of the old English cart-horse, the Cleveland Bay, the Suffolk Punch, and the Clydesdale breed, with concise descriptions of each. The first breed has been much altered by modifications, but it still exists in the midland counties, where prejudice yet supports it in opposition to reason and experience, and where the ideas of the farmers are as slow as the motion of their waggons. The employing of huge actionless animals in the London drags does not prove that a lighter, not too light, and more muscular breed would not perform the purposes as well or better. In improved husbandry, such a breed is a dead loss.

The Cleveland bays are chiefly valued for carriage horses, and are thought to have proceeded from crossing the chestnut breed with the blood horse. For farming purposes, our own experience proved them inferior to the native blacks and greys on the same food and work. The Suffolk Punch is a useful animal, and yet seems tending to extinction. They are mostly confined to Suffolk and the adjoining neighbourhood.

The Clydesdale breed is reckoned the best in Scotland, though many other nameless breeds are equally useful and valuable. For farming purposes, they want loftiness in the fore quarters and depth of chest, and the lightness in the hind parts, in order to constitute power and action; yet they are much esteemed for drawing heavy loads singly, and also for speed.

On the subject of breeding, the author observes the glaring blunders committed by coupling animals of dissimilar properties, and quotes as an instance, the cross between the draught mare and the blood-horse, as producing a weedy progeny of little value. But with every attention that can be paid to the breeding of racers and hunters, a great number are of little value, and a few only ever come forward A well selected cart-mare will produce from a blood horse, a most valuable progeny, fit for hunting, plough or cart. But skill and judgment must be exercised; not a mare of any qualities, but possessing the properties that are deemed essential and requisite as nearly as can be found. Much too little attention is paid to the female side in breeding; for at the present day most districts possess the foundation of useful breeds of stock, by selecting the best for propagation, and which may be soon obtained by skill and attention without the expence of costly importations.

THE NORMAN HORSE.

(FROM THE QUARTERLY JOURNAL OF AGRICULTURE.)

Having in a recent number, under the title of "Sketches of Normandy," giving an outline of the principal characteristics of that fine province, so far as I believed suitable to an Agricultural Journal, with, however, but a slight reference to the horses of that district, I shall now, having made myself more particularly acquainted with this interesting subject, which I believe to be of sufficient importance for a separate sheet, devote this to their exclusive consideration.

The Norman horse, like the man of Kerry, could boast, if he had the power of speech, of a remote origin, and also trace his race to the time and country of Milesius.

The *Spanish* horse (of Arabian ancestry), though now, I believe, extremely degenerate, was the immediate progenitor of the noblest description of its species in France and England. Ancient medals, painting, and tapestry, exhibit to us, what, from their perfect similarity of appearance at the periods when those works of art were respectively furnished, we must conclude to have been the exact representation of the then existing horse, which appears to have possessed a conformation indicative of great strength and beauty. The artists of the times when chivalry was at its height, and in the ages antecedent, in which the arts of sculpture and painting flourished, present a peculiar form of horse, which was properly the *war-horse*.

The artists, of course, represented the horse as they saw it in their own days, and they were probably faithful in their portraiture. The contrary supposition would be opposed to facts which constantly present themselves. For instance, the humble occupant of a cottage near my house has a painting over his fire-place, intended to represent the parable of the Prodigal Son, who appears in yellow leather breeches, top-boots, and with an enormous watch-chain at his fob, in the act of stepping into a ginger-bread coloured post-chaise, driven by a postilion in a smart-looking jacket. Now, whatever may be thought of the judgment and taste of the artist in this case, all must agree in believing that the prevailing dress of a certain class of gentlemen in his day was such as that with which he has invested the prodigal, and that post-carriages were then usually painted of a bright colour.

The same defective taste, or, more correctly, the want of a proper type or original before them, led most of the painters of the Flemish school to represent the knight's steed as a great stout draught beast, without grace or activity, because they saw in their day a sluggish brute, with very heavy, thick-set legs, and heavy low tails, which local circumstances, climate, food, and the advancement of agriculture in particular, had rendered suitable to the country, and common to the period in which they flourished.

Now, if in the representation of the war-horse, any of those artists had taken a correct model, such as they might have seen in the celebrated tapestry of Bayeux, generally attributed to Queen Matilda, and invaluable as a monument of the Norman conquest, from the exactness with which it gives the forms and costumes of that period, they would have represented an animal distinguished for the combined qualities of strength, activity, and elegance of form.

The true type was lost in successive ages, and the artists who imagined that they gave its resemblance when they mounted the knights of the round table upon draught horses (not unlike those of the modern London brewer,) were entirely mistaken; they described an animal of a later period, of which they had models before their eyes, on the canvass of preceding masters (equally incorrect), or in actual existence; but that heavy kind of horse had ceased to exist in France in those ages of which the artists of the 16th and succeeding centuries professed to give historical descriptions.

I shall endeavour to trace the variations of the Norman horse from the original breed, before I come to practical details respecting the present most useful class of draught horses in the north of France, and shall avail myself, in some measure, of the substance of a pamphlet recently published by M. Hoüel of Normandy, "On the Varieties of the Horse in France."

It would appear from the researches of M. Hoüel, that when the Romans became masters of France they had but two sorts of the animal, the war-horse, and the sumpter or pack horse, which was of a hardy mountain breed, used for the purpose of carrying back loads of provisions, military stores, or articles of commercial intercourse.

The circumstances of that period required no other description of horse, none but the aristocracy being then allowed to throw a leg over a saddle, and oxen being universally used for agricultural purposes. The knights who went as conquerors or colonists from the Roman territories to France, continued to exercise the exclusive right of riding on horseback; if any of the unprivileged classes desired to save their feet, they could only use an humble animal to bear them, or move in a cart. This, however, was considered so effeminate and degrading in those of high station, that sovereigns were deemed unworthy to rule over men if they suffered themselves to be indolently borne in a carriage drawn by oxen. A freeman of the country, if in debt, could claim exemption from seizure of three things, his horse, his sword, and harp.* No wonder, then, that the horse became an object of solicitude and care.

From the rank of the equestrians in those times, it must be inferred that great care was taken to renew and preserve the valuable property of the horse, by the importation of African or Arab blood, and afterwards, though the exclusiveness of the patrician order had passed away with time among the descendants of the Romans in France, horses, from the spirit and influence of chivalry, of a better class continued to be objects of admiration and demand; and, considering the scenes of fatigue, difficulty, and danger which the horsemen encountered in actual combat, or in the tournament, and the increase of weight which fashion introduced into their armour, additional strength was required in the charger which was to bear them, and which M. Hoüel thinks was the type of the English Cleveland breed, the handsomest and strongest description of the coach-horse—the Mecklenburgh in Germany, and the Cotentin in France. But as that description of horse was too valuable for the purpose of a hackney, and perhaps too high trotting for long road journeys, a less noble-looking but more smoothly moving animal became the object of the breeder; an inferior kind was thus gradually introduced, less distingué in form, but stouter and of an easier gait, which they named a *roussin*, a term which they bear at this day The roussin was formerly trained to move in an amble, and with a high step and rounded knee by means of cords and shackles, which were applied, like the double fetters of a sheep, from the fore to the hind legs, and caused the peculiar movement desired; and the high step was taught, as is practised by some horse-dealers in London at this day, by suspending a piece of stick from the neck to the knees; as the horse lifts his legs he strikes them against the stick, and this gives him a tendency to move them very repeatedly in the expectation of avoiding the repetitions of the blow. This discipline, however, no longer prevails in Normandy. I have heard it asserted with confidence, that the tendency of the limbs to move in this peculiar way is now remarkable in the breed of this description, and that, even before they are trained to these movements, they do it *almost* naturally. This I cannot corroborate from my own observation, but I see no reason to doubt it. Some dogs set game with little or no discipline; the acquired habits of their progenitors through successive generations are, by a mysterious and wonderful agency, impressed upon them. I have little doubt that the offspring of a breed of sheep always accustomed to move in fetters, ultimately (from the power in the animal economy of transmitting habits) would acquire a halting gait. Such a supposition is quite consonant with our knowledge of physical facts.

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* The same law, no doubt of Norman origin, prevailed in England (Coke upon Lyttleton, 47. a.) respecting a horse in actual use.

To the influence of the fairer and gentler part of the human race—who in the middle ages were objects of singular devotion and respect, and who had no carriages nor Macadamized roads for travelling to tournaments and making pilgrimages, or interchanging visits—is attributable the introduction of the palfrey, upon which they rode with their fathers, or their husbands, from one chateau or monastery to another; and so considerate were the legislators of those days, that even in cases in which a lady was punished by the confiscation of property, her palfrey, along with two robes and a bed, and a few *et cæteras* were reserved for her use. The best specimens of the first were bred in Normandy, the other two were common, and the best was to be found only in Limousin and Navarre. The crossing of the native breed of France with the Arab horses brought by the Crusaders, and that of the Andalusian breed by the Moors of Spain, *originating* in the Barbary race, supplied the studs of the nobility and wealthy abbeys. Great importance was attached to the possession of the fine animals imported from Spain, and, until the end of the last century, the studs of France were supplied with sires of the Spanish breed.

If the influence of woman prevailed to establish in France one kind of horse, the introduction of gunpowder tended to remove another. When it ceased to be necessary to wear a heavy weight of armour, a less powerful horse was required, and a lighter and more active sized one gradually became the favourite; yet, as a taste prevailed amongst the youth of the country for equestrian sports, (very different, however, from our fox-hunting), horses with speed and activity were in demand. The Limousin breed, which greatly resembled the English blood-horse (both dating their remote descent from the East,) and would have been equally perfect, if propagated, fed, and groomed with equal care, was held in the greatest estimation in the fifteenth century, and several veterinarians of authority have given as their opinion that the former, having a very decided advantage in climate, ought to have been, of course, under equally good treatment, the superior animal of the two. But the charger was not yet out of fashion; his transformation became, it is true, gradually different; but his strength and weight still rendered him valuable for the heavy cavalry; and when carriages were introduced at court among the nobility, it became the *coach*-horse. In Normandy, the rearing of this description of the animal became an object of much attention to the farmer as the use of carriages increased; and the second-rate war-horse, instead of being the road hackney of the soldier or the traveller, became almost exclusively used for draught; and as ladies began to move about in carriages, the palfrey disappeared, or was moulded gradually into another form, and the sumpter-horse was promoted or degraded, as the reader may choose to consider it, to the collar, except in mountainous districts, or localities without roads passable for wheel-vehicles, an imperfection still continuing in some parts.

The altered state of matters in France subsequently demanded a corresponding change in the conformation of the horse; and on this subject the remarks of M. Hoüel are extremely good. He considers the race of draught-horses as comparatively modern; for how, he asks, could there have been draught-horses when there were no carriages to draw? Oxen and mules were the animals employed for draught; and though horses were occasionally used for such purposes, their employment in this way was only an exception. With the increase of roads, civilization, and luxury, the demand for draught-horses of every description increased also, but, from the condition of the roads, the rate of travelling was very slow, and the carriages were heavy, clumsy, and uneasy, so that the horses moved at a snail's pace, and could not drag their load without great physical strength and weight; the heaviest and largest horses, therefore, became objects of demand, and symmetry of form, speed, and activity were sacrified in the rising generations as useless qualities, under the altered circumstances of travelling. And as it was supposed that low, swampy pasturage, by its influence conjointly with climate, would affect the lymphatic system, so as to produce the heaviness of form desired, Caux in Normandy, parts of Picardy, and the districts of France adjacent to Flanders and Brabant, became the principal breeding localities, and acquired a high reputation for the production of the draught-horse. The finest sizes of this ponderous and sluggish breed were procured in the Dutch provinces, where that class had long prevailed. The tendency to adapt its organization to circumstances, which the animal frame (as has been already noticed) unquestionably possesses, appears to have produced, in the gradual progress of years, remarkable changes of conformation in the horse. But without any attempt at tracing these alterations, the great vicissitudes which France has undergone within the last fifty years, have occasioned considerable modifications in the form of the heavy draught-horse, which was the kind in general use at the commencement of this period. These I shall point out as succinctly as possible. During the Revolutionary wars, and many years subsequently, when horses were required in great numbers for cavalry purposes, and taken without much ceremony—and at one period paid for in very depreciated currency—the farmers, deprived of their horses by the application of the conscriptive principle, replaced them with a small description of fillies from Brittany, which had almost exclusively been used in agricultural labour, and kept them in a breeding state at as early an age, and as constantly as they could, in order to exempt them from military service. This was the origin of the introduction of mares of a new class, and for other purposes than those of the saddle and the carriage of the gentry, to which they had been previously limited. A more active, but far smaller, horse sprung up in a few years, and this is now the prevailing sort for all purposes.

Napoleon, with his usual foresight, took care to meet the exigencies of his times by the establishment of *haras*, in which the finest sires were kept for the purpose of raising the best troop horses. Until the year 1815, the perpetual requisitions for the cavalry and purposes of military show in France, caused such a demand for the suitable kind of animal, that the land proprietors found breeding very profitable; but perhaps, in too many instances, they sold mares which would otherwise have been kept for the breed, and increased their supply of valuable animals. For a few years after the peace, the improvement in the quality of the horse was progressive though slow; and new regulations of the *haras* afforded increased facilities to the proprietors of land in Western Normandy; and twelve years ago a general annual cattle show in every arrondissement was established, at each of which a certain number of stallions from St. Lo and Du Pin, have been stationed. This arrangement on the part of the government is liberal and necessary under the existing circumstances of the country, in which there is such a vast number of small farmers, among whom neither capital nor energy for procuring high-bred animals can be expected. The *haras* are still kept up. Those at St. Lo, and Du Pin, in Normandy, have at this moment some of the finest thorough-bred English horses, whose services are afforded almost gratuitously to the farmers of the country, and to any persons importing thorough-bred English mares, on the condition of the dams and produce being kept in their department for the two subsequent years. Government, through their officers in the different arrondissements, give very liberal premiums for the best colts and fillies, classed as to age, and exhibited at the annual show. But ignorance and want of care in the selection of stallions and mares, and stupidity in classification, have caused a confusion of breeds which has disappointed the sanguine expectations of theorists.

Reproduction of the species seems to have been the object, without regard to the qualities of the parents on either side, and with indifference to the defects which great numbers of the select horses at St. Lo and Du Pin, have exhibited in their conformation. The farmers however, have begun to learn that four ill formed and bad conditioned colts execute less work in the spring, cost more to feed, and sell for less, than two good ones.

The error of attention to the qualifications of the stallion alone is not peculiar to Normandy: the same stupid desire of obtaining a foal from a worn-out, ill-framed mare, *because she can do nothing but breed*, is very common among the small farmers of Ireland, who in so many respects, are similarly circumstanced with the Norman peasant. With persons of this class, no good breed of horses can be expected: their means, in all particulars, are too much restricted; and wherever the system prevails of rearing horses with insufficient pasturage, and the practice of working two-year-olds continues, a very inferior animal must be the result.

Suppose a legislative enactment, by the authority of which, all colts considered unfit for reproduction were to be emasculated, the present motley, and in some respects defective, breed of Normandy, would of course improve considerably; yet, if the qualities of the mare should still be held as unimportant, defects in the progeny would still exist. Good points are not less essential in the dam than in the sire, and in a country solicitous to effect an amelioration in the breed of its horses, and where the expense of importation necessarily prohibits a very extended introduction of superior mares, it is the interest of the farmers to breed only from the best mares which they have. M. Hoüel remarks, that foals inherit more of the upper parts of their form from the sire, and of the lower from the dam; and he gives what he considers a proof of this, from observations made on the produce of Pleasant, a horse which had been at the hara of Du Pin, and subsequently became his own. It appears by a document presented by M. Regnaul de Vains, to the Association of Normandy, that the total number of mares in 1823, in the small arrondissement of Avranches, was 5545 of all ages, and that of those 299 were employed in rearing foals. There were, two years ago, in the same district 8780 mares, and 2100 foals, which fact shews how greatly the use of mares for general purposes has increased.

The horses of Normandy are a capital race for hard work and scanty fare. I have never seen such horses at the collar, under the diligence, the post-carriage, the cumbrous, and very heavy voiture or cabriolet for one or two horses, or the farm cart. They are enduring and energetic beyond description; with their necks cut to the bone, they flinch not; they put forward all their efforts at the voice of the brutal driver, or at the dreaded sound of his never-ceasing whip; they keep their condition when other horses would die of neglect and hard treatment.

A better cross for some of our horses cannot be imagined than those of Normandy, provided they have not the ordinary failing, of too much length from the hock downwards, and a heavy head. It is very doubtful whether the infusion of much English blood among the Norman breed will be serviceable. I have seen many bad productions in consequence of this crossing, chiefly loss of weight and strength in those points where the slow draught-horse should excel. The good condition of the principal French roads calls for proportionate activity and speed in the coach-horse, but while the coaches are of the present waggon kind, and loaded without mercy, it is preposterous to attach to them horses of a light frame, and for dragging a smaller carriage through the ruts and sloughs of cross-roads, or working in a team with oxen, the heavy hoofed horse, which will not sink irretrievably in a quagmire, is the best. The coach-horse of old times seems to be the proper model while the coach itself remains unaltered, and the present stout, active, little Norman cart-horse is probably the best for farm work, and for the back loads which it too frequently bears. The want of proper accommodation for dams and their offspring in the little farms in the north of France, is a great obstacle to rearing of foals; the milch-cow, and the foal with her mother, are often lodged together in a mass of filth, and with a contraction of space, which must be injurious to health, and the proper development of the frame. The wonder sometimes is, how a colt avoids knocking his head against the lintel of the stable door; and as it is often locked up with the working oxen in a house heaped with fermenting manure, its continuance in health it surprising. This system of domestic education, however, renders the Norman horses—and the same observation applies to all the northern provinces of France—very gentle and docile; a kicking or vicious one is almost unknown there; any person may pass with security in a fair at the heels of hundreds of them. They are treated, however, not with kindness, but with tyranny and cruelty from first to last; a kick or a blow from their master settles every point with them; they are complete slaves who dare not rebel, and their owners in general have no degree of compassion for them. The *reign of terror* may be necessary where so many high spirited and violent *stallions* are the subjects of government; but it would appear as if the *principle* of cruelty, originating perhaps in the habit of reducing to subjection those unruly and often dangerous creatures, was influential in the treatment of every kind of horse.

Having already alluded to this subject, I shall not dwell upon it here, but merely give an instance unhappily in point. It is very common to put a small pony, in the outrigger fashion, alongside of a much larger animal in the shafts of a heavy gig with a cumbrous head, for the conveyance of two or three travellers; and in defiance of every rational expectation that the little horse should keep an even pace with the other, and pull equally at the collar, he is expected to do so, and perpetually flogged in nine cases out of ten. I have remarked this kind of barbarity on one occasion during a drive from Avranches, to Mont St. Michel, a journey which was intolerable to my feelings on that account. The owner of the vehicle was the driver, and seemed to take pleasure in flogging a little grey mare, which he had coupled, in the fashion to which I alluded, with a powerful horse. She appeared to me to pull keenly, and to exert all the little strength she possessed in dragging as briskly through mire, which in some places was axle-tree deep; but her unfeeling master, except at rare intervals from deference to my expostulations, applied the lash to a *raw* which he had established on her back. Death happily relieved her from this odious tyranny in a few weeks afterwards, and I certainly rejoiced at hearing that her owner had been so deservedly punished for his brutality. I mention this from a coincident remark which I have met in "Trollope's Summer in Brittany," where he mentions a journey which he made in a cabriolet, "dragged by one sleek and sturdy black horse in the shafts, assisted by a most miserable-looking half-starved grey, about a quarter the size of his big companion. This unfortunate supplement, tied on with an old rope, shuffled along by the side of the off shaft; and though incapable of doing much towards drawing the load, yet was of considerable use to his fat friend, the stalwart black, by taking all the flogging, thus serving also to illustrate the advantages of the division of labour." In fine, humanity to their horses is not the characteristic of the Norman peasant, the whip is never out of his hand. From boyhood he learns the use of it; his pride is to make his crack louder than another's; he practices at this perpetually; he is heard a mile off on a road, or from one end of a long street to another, though his horse may be pulling to its utmost strength; the crack (I do not say the blow) continues unceasingly. If the urchin, or the man—who ought to have some discretion—as he drives his team along, passes a horse which is spirited under his rider, or one trying to steal a moment's sleep at the door of a public house, at which he may have been starving for hours, the whip is cracked to occasion mischief to the one, or terror to the other. The carter is not content with tormenting his own horse, he endeavours to annoy every other that comes in his way, so that the unfortunate animal rarely receives that compassion and care which the *merciful* man bestows upon the meanest of his domestic animals. It is gratifying to turn to the consideration of the horse under very different treatment.

In the "Sketches of Normandy," I remarked that the *Gendarmes* are the best-mounted men in France, though in general the French cavalry of the line are not well mounted. Any one who has a tolerably correct notion of the points of the horse, must immediately admit the truth of this remark, on viewing a troop of cavalry horses. Their long backs, sluggish heads, and heavy limbs, render many of them utterly unfit for active service and rapid movements; how the riders can tolerate the rough pounding stamp of such animals as they are doomed to bestride, or excite them to a charging pace, appears inconceivable. Horses of the handsomest description are to be found in the stables of the Gendarmes; for though the supposed price of each horse is only 600 francs, they rarely cost less than 700 or 800 francs. The men must provide them at their own expense, either directly from their pockets, or by means of an advancement made to them on government authority, and repayable by monthly instalments. If the horse dies by disease or by ordinary accident, the gendarme must replace him, with but little assistance from the arrondissement on which taxation rests for the purpose of supporting the Gendarmerie. There are in this fine force, horses which in England would fetch from 100*l.* to 150*l.*, as weight carriers in the field, or for private carriages. Those of the best description are bred in Normandy; and but for the coarseness and heaviness of their head, they would be perfect models. Though they move about a good deal, they are always ridden at a slow pace, and consequently last for many years.

Until 1820, the Gendarmes had the privilege of buying and selling their horses, the inspector being, of course, satisfied that they are always sufficiently mounted for service, but this very naturally led to a system which was unsoldierlike, and injurious to the interests of the service. Since that period they cannot sell or exchange their horses unless when retiring to private life. It was obviously unwise to place them at any time under the temptation of becoming horse-dealers; but the plan of allowing them to please themselves in the selection of the horses which they are to ride (subject of course to the approval of a competent officer,) is judicious, gratifies their taste or their pride, and identifies the horse and the master in a common bond of good understanding. There are many well constructed stables for this force; those which are contiguous to the *mairié* at Avranches, are very good, the stalls being wide and carefully boarded, and the ceiling unusually lofty; the ventilation, therefore, is excellent, and the condition of the horses shews that they are well kept. To each stall there is a small rack and manger, in the common English fashion. The rations to each horse is the same as the heavy cavalry allowance, viz.—

Oats............	10lb.	per day
Hay............	10lb.	
Straw	10lb.	

The hay is divided into three portions, and served out at proper intervals; they eat a good deal of straw, and the rest serves for litter; and, as in our own cavalry service, the regularity with which they are fed and groomed, amply compensates in the effect upon their condition, for what a farmer would consider short allowance for his team.

There are not, I believe, any Flemish forges in Normandy, as in some other parts of France, and the mode of shoeing which I have witnessed, while it ensures the safety of the *operator*, is very cruel to the *operatee*. If a horse is quiet, he is shod in the ordinary way; but if he be in the least degree unsteady or vicious, he has the twitch immediately put on his nose, and when the hind legs are to be shod, each of them is tied up in turn from the fetlock to the *tail* by a rope which (hitched round *it*) the smith holds, and as occasion requires, he draws up the leg to a greater or lesser height according as the horse labours or kicks; in short, the poor brute is made to hold up its leg by its own tail. The assistant smith ties up the horse in the same way if he has reason to apprehend difficulty in shoeing the fore-legs, as the best security against a kick from behind; this is fair enough while the horse's hind leg is on the ground, for while it rests there quietly no pain is inflicted, and its submission is thus secured; but the suspension of the leg from the tail while the smith pares the foot and puts on the shoe, must be distressing to the patient. Few horses, if any, are so vicious by nature as to require this harsh treatment; it is a want of gentleness in the smith which causes a horse to resist what must always be a very alarming operation to a young horse; if he be frightened at first, he resists, and then, to save himself trouble, the smith treats him with severity which is never forgotten. The next time he comes to the forge he trembles, and prepares for increased resistance; an operation which is to be repeated every month of his life, and ought to be rendered easy and familiar, is thus made a source of suffering. The twitching of his nose and his tail becomes a matter of course, and the apprehension of the torture renders him at last stubborn and violent. Had a system of soothing kindness been substituted, the stubbornness apprehended and complained of would probably never have been manifested. D.

ON BAGGING WHEAT.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—In reply to a "Lindsey Farmer," "bagging" is performed thus:—

First make a band and lay it down, then, standing in the furrow left hand to the standing corn, cut a handful, put the stubble ends of this handful all even, then grasp it in the left hand eight or ten inches from the end, and with this assistant lay a little of the standing corn back, or from you, and with the *scythe* hook chop off cutting inwards, close to the ground, the corn so laid off; move the left hand forward, lay back the corn as before, and make another cut, and so proceed—moving left hand, one foot, and the scythe hook simultaneously—across the "land" or "ridge," or half way across it, if there are two persons on it; four to five yards is the usual breadth taken. Having reached the breadth intended to be taken, drop the corn which till now has been held in the left hand, among the cut corn which now leans against the standing corn, and commence collecting what has been cut; for this purpose, walk backwards over the same ground, or rather a little nearer the standing corn—use the left hand, the hook, and the right foot—roll over the cut corn with the hook, and at the same time cut some more with the point of it, and keep walking backwards and collecting all together till you reach the furrow from whence you started, when you will find you have got an armful; lay this armful into the band, cut another left handful as at first, and again go on cutting inwards; returning with the armful, lay it in the same band, which is then enough for a sheaf: make another band for another sheaf, and proceed as before; cutting forwards, and cutting and collecting backwards, clears about a yard wide. Price—oats about 9s., wheat about 12s. per acre, to cut, bind, and shock.

Bucks, Aug. 25, 1841.

Sir,—Bagging wheat has been a common practice in parts of this county (Dorsetshire) for many years, and is performed with a heavier sickle than that used for hand-griping; indeed, here the latter practice is quite superseded by the scythe or bagging. The price usually given for cutting an acre statute measure in this mode, is five shillings and drink; our usual average weekly wages being for an able man 9s. per week. The advantage of this system is, that the wheat is cut quicker, and the straw lower, than by hand reaping—and laid more regularly in catches or small parcels ready for tying, which cannot be done by the scythe.

If you are not tired of inserting propositions for the alteration of the corn laws, allow the following scale to appear in your next week's journal. The great object is to give adequate protection to the home grower — at the same time, to keep the price of wheat as even as the uncertainty of seasons will permit, and to make it out of the power of the large factors and speculators to raise the markets for their own benefit; in which case, it frequently happens that the enhanced price goes into their pockets instead of the farmers'; the latter paying tithes, and sometimes rent, according to a high price for corn, which *they actually* do not receive.

Scale.—A permanent duty of 6s. per qr. on wheat imported. Ports shut till wheat is 56s. per qr.—

56s. per qr.	24s. duty, besides 6s. permanent.	
57s. ..		
58s. ..		
59s. ..	18s. duty,	ditto
60s. ..		
61s. ..		
62s. ..	12s. duty,	ditto
63s. ..		
64s. ..		
65s. ..	6s. duty,	ditto
66s. ..		
67s. ..		
68s.	Ports open at the permanent duty.	

The corn inspector's accounts to be open to all parties—returns to be given for home grown corn only, by both buyer and seller of all corn bought at market or at home during the week.

Your obedient servant,
D. F.

A Correspondent in Worcestershire says, that bagging is executed by a tool called a bean hook, and the straw is cut by a stroke instead of the cutting of the sickle, which is drawn towards the reaper, holding or collecting the straw in the left hand; the best baggers use also a wooden hook in the left hand, to collect and bring together the cut wheat in a bundle-like shape to the ground.

ON THE GUANO.

By Cuthbert W. Johnson, Esq.

Guano—Is the name of a manure, much employed by the cultivators of Peru to fertilize their sterile plains, lands on which occasionally there is a total absence of rain for many months. This manure is the excrements of sea birds, and like that produced by all animals feeding on animal food, is of a very powerful description. (*Davy's Elem. of Ag. Chem.* 296.) It exists, according to M. Humboldt, in the greatest abundance in some of the small rocky islands of the Pacific Ocean, as at Chinche, Ilo, Iza, and Arica. Even when Humboldt wrote some twenty years since, fifty vessels were annually loaded with the Guano at Chinche alone, each trader carrying from fifteen hundred to two thousand cubic feet. The Guano exists, according to Liebig, (*Organic Chem.* 81,) on the surface of these islands in strata of several feet in thickness, and is in fact the putrid excrements of innumerable sea-fowl that remain on them during the breeding season.

It is used by the farmers of Peru chiefly as a manure for the Maize or Indian corn, and, *it is said*, in the small proportion of about one cwt. per acre.

It appears, in the state in which it has been lately introduced into this country, to be a fine brown or fawn coloured powder, emits a strong marine smell, which blackens when heated, and gives off strong ammoniacal fumes; when nitric acid is mixed with it, uric or lithic acid is produced. It has been analysed by various chemists. In 1806, an analysis of a very elaborate description was published by M. M. Fourcroy and Vanquelin. They found in it a fourth of its weight of uric acid, partly saturated with ammonia, and partly with potash, some phosphate of lime and ammonia, and small quantities of sulphate and muriate of potash, a little fatty matter, and a portion of sand. It has been more recently analysed by Mr. Hennell, of Apothecaries Hall, who found in Guano—

Bone Earth	30	5
Sulphates and Muriates	3	
Uric or Lithic Acid	15	
Carbonate of Ammonia	3	
Matters volatile at 212°, consisting chiefly of water and Carbonate of Ammonia	12	
Other organic matters	36	5
	100	

It has also been analysed by Mr. Brett, of Liverpool, who found in 100 parts—

Earthy insoluble salts, chiefly Phosphate of Lime	29	2
Soluble salts fixed, Alkaline, Sulphate and Muriate	2	5
Organic Matter	68	3
The organic matter consists of—		
Lithic Acid	16	1
Ammonia	8	7
Other organic matter and moisture	43	5
	[*] 68	3

M. Boussingault, who also analysed Guano, detected in it, besides the earthy salts, the urate, phosphate, oxalate, and carbonate of ammonia. (*Ann. de Chim.* T. 75, *p.* 319.)

There is no doubt but that this is a very powerful manure; the very composition of its salts would indicate that fact. Thus uric, or lethic acid, which is a fine white powder nearly insoluble in water, (1720 parts of water only dissolving one part or uric acid) is composed according to the analysis of Dr. Prout, of—

Hydrogen	0	125
Carbon	2	250
Nitrogen, or Azote	1	750
Oxygen	1	500
Thompson's Chem., vol. 2, p. 187.	5	625

Urate of ammonia and urate of potash, are fine white powders, also very soluble in water. Of the phosphate of lime, of the guano, the earthy salt, and most valuable portion of bones, it is unnecessary to comment; I have in my work "On the Fertilizers, p. 136," endeavoured to show how essentially valuable this salt is to all the farmer's commonly cultivated crops.

The use of the dung of birds is not a modern improvement, for that of poultry has been adopted as a manure from a very early period. M. P. Cato, the earliest of the agricultural writers, in his work lib. 36, commends the use of pigeons' dung for meadows, corn lands, or gardens; and John Worlidge, in 1669, was warm in the praise of the dung of fowls. Pigeon's or hen's dung," he says, (*Mystery of Agriculture, p.* 71.) "is incomparable; one load is worth ten loads of other dung, and is therefore usually sown on wheat or barley that lieth afar off, and is not easy to be helped." And he says in another place—"A flock of wild geese had pitched upon a parcel of green wheat, and had eaten it up clean, and set thereon and dunged it several nights, that the owner despaired of having any crop that year; but the contrary happened, for he had a far richer stock of wheat there, than any of his neighbours had."

In some experiments made by Mr. Skirving, of Walton, near Liverpool, in 1841, the Guano was tried at the rate of two or three cwts. per acre, as a manure for Swedish turnips, and Italian rye-grass, with very considerable success; it appeared to be equally, or rather more efficacious, than twenty cubic yards per acre of farm-yard manure.

The most elaborate set of experiments upon the Guano with which I am acquainted, were made in 1810, for potatoes and mangel wurzel, at the island of St. Helena, by the late General Beatson, and they are the more valuable from being comparative. The soil on which these experiments were made was rather stiff, being composed of blackish mould, intermixed with friable fat clay.

The following table gives the results. In every experiment 35 loads of horse dung litter, per acre, were used, 35 of hog dung litter, and 35 bushels per acre of the Guano.

WITH POTATO SEED THE SIZE OF TURNIPS, PLANTED WHOLE,

TWELVE INCHES DEEP.—PRODUCE PER ACRE.

Guano	499 bush.	Hog dung	408 bush.
Horse dung.	492	Soil simple	337

NINE INCHES DEEP.

Guano	466 bush.	Pig dung	427 bush.
Horse dung.	460	Soil simple	375

SIX INCHES DEEP.

Guano	554 bush.	Pig dung	447 bush.
Horse dung.	583	Soil simple	395

THREE INCHES DEEP.

Guano	531 bush.	Pig dung	414 bush.
Horse dung.	479	Soil simple	311

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[*] For these I am indebted to Mr. M'Donald, of St. Mildred's Court, London.

LARGE POTATOES CUT IN PIECES.

TWELVE INCHES DEEP.

Guano.....	505 bush.	Pig dung	369 bush.
Horse dung.	648	Soil simple....	285

INE INCHES DEEP.

Guano.....	557 bush.	Pig dung	434 bush.
Horse dung.	589	Soil simple....	382

SIX INCHES DEEP.

Guano.....	589 bush.	Pig dung....	466 bush.
Horse dung.	531	Soil simple....	408

THREE INCHES DEEP.

Guano.....	557 bush.	Pig dung	375 bush.
Horse dung.	511	Soil simple.....	414

FROM MIDDLE EYE OF POTATO SEED SCOOPED OUT,

PLANTED TWELVE INCHES DEEP.

Guano.....	382 bush.	Pig dung	298 bush.
Horse dung.	479	Soil simple....	165

NINE INCHES DEEP.

Guano.....	375 bush.	Pig dung	298 bush.
Horse dung.	479	Soil simple....	210

SIX INCHES DEEP.

Guano.....	576 bush.	Pig dung....	405 bush.
Horse dung.	563	Soil simple....	337

THREE INCHES DEEP.

Guano.....	453 bush.	Pig dung	485 bush.
Horse dung.	382	Soil simple....	343

WITH SMALL POTATOES PLANTED WHOLE.

TWELVE INCHES DEEP.

Guano.....	492 bush.	Pig dung	992 bush.
Horse dung.	401	Soil simple....	369

NINE INCHES DEEP.

Guano.....	557 bush.	Pig dung	525 bush.
Horse dung.	512	Soil simple....	440

SIX INCHES DEEP.

Guano.....	628 bush.	Pig dung	544 bush.
Horse dung.	583	Soil simple....	570

THREE INCHES DEEP.

Guano.....	557 bush.	Pig dung	440
Horse dung.	414	Soil simple....	440

The total comparative produce in lbs. of potatoes, from these manures, was, therefore—

	lbs.
Guano, or sea-fowl dung, at 35 bush. per acre..	639
Horse dung, 35 cart loads per acre...........	626
Hog do. do. do...........	534
Soil simple................................	446

With Mangel Wurzel, the produce per acre on a similar soil, was as follows:

	Leaves.	Roots
Soil simple..............	38 tons.	19½ tons.
Hog dung and ashes, 360 bush. per acre.....	131	66½
Guano, 35 bush. per acre..	153¼	77¾

The Guano, adds General Beatson, or sea-fowl dung, which is found in considerable quantities upon Egg Islands. The Guano, he adds, was first recommended to my notice by the Right Hon. Sir Joseph Banks, President of the Royal Society. "It furnishes the loading of an immense number of vessels that are constantly employed in bringing it from small islands to the main land on the western coast of South America, where it is sold and distributed for the purpose of manure, which it answers in a degree infinitely superior to any other article we have the knowledge of. A handful is considered as sufficient for several square yards of land, the produce of which is exuberant, in consequence of the force of this application."

The accuracy of this valuable communication has been most amply confirmed by my experiments in the culture of potatoes, as well as upon grass lands. Thirty-five bushels of the Guano, or three cart loads, per acre, appear to me equivalent in effect to seventy loads of good rot dung. I should imagine that abundance of this most valuable manure might be had from many of the rocks and islands on the coast of Scotland. The effect of the Guano upon grass lands is comparatively greater than in the potato experiment: from what cause this proceeds it may be difficult to explain; but as Dr. Priestley found, by experiment, that vegetables throve best when they were made to grow in air made putrid by the decomposition of animal and vegetable substances, it may be inferred that the very strong effluvia which issues from the sea-fowl dung or Guano, together with its being readily washed among the roots of vegetables by the first falls of rain, are circumstances that may possibly render its effects as a top-dressing greatly superior to those it produces when it is mixed with the soil. By this mixture its power may be weakened and a great portion of effluvia, which by some is supposed the proper food of plants, being retained under ground cannot escape and unite with the atmosphere. On the 29th of July, 1808, I marked out a space on the lawn in front of Plantation House, which measured one rod in breadth, and twelve rods in length; this was divided into twelve equal parts, or square rods, and numbered progressively from 1 to 12. The Guano was reduced to a powder and sifted, and upon No. 1 a quart of this powder was evenly strewed by the hand: this is at the rate of five Winchester bushels per acre—because 160 square rods, or an acre, would have required that number of quarts, or exactly five bushels. In the same manner, No. 2 had two quarts, No. 3 three quarts, and so on to No. 12, which had 12 quarts, or at the rate of 60 bushels per acre. From the 29th of July there were daily drizzling rains until the 5th of August, when the effect of this invaluable manure began to appear. On the following day the whole extent of the twelve rods became highly verdant, and exhibited such a contrast to the unmanured part of the lawn, that it had the appearance of having been newly turfed with a finer kind of sod. The effect gradually increased, and in the first week of October, that is, in a little more than two months, the higher numbers from 6 to 12 having from 30 to 60 bushels per acre, excited the surprise of every person who saw them, being covered with the most exuberant grass that can be imagined, and having more the resemblance of a crop of young wheat very thickly sown, than of any grass I ever beheld. This is more remarkable, as at that time the copious rains which fell in August and the spring season, had made no visible effect on the adjoining part of the lawn. It was from a frequent and careful inspection of the above experiments that I have estimated 35 bushels of Guano per acre, to be equivalent in effect upon grass lands to 70 loads of good rot dung. I have been informed that Guano is sold at Lima and at other towns on the coast of Peru, for a dollar a bag of 50 pounds weight, and that it is much in use there for manuring fruit trees and gardens. It is certainly one of the most powerful of manures, and therefore it is necessary to be cautious in using it. I have observed when too much is laid on grass, that it burns it and destroys it. I would therefore recommend to those who may try it on fruit trees, to begin with not more than three quarters of a pint to each tree, and to trench it about a foot deep all round the roots. If the first application be found insufficient, a second or third may be given at intervals of two or three months; or a better mode, perhaps, of determining the quantity of Guano proper for each fruit tree would be to select about a dozen trees of the same kind and size, and to vary the quantities by an easy progression, from three quarters of a pint, to one or two quarts or more to each tree.—*Com. Board of Agri., v. 7, p.* 225—240.

The Guano is entirely a new fertilizer to this country—about twenty casks were imported in 1840, by Mr. Myers, of Liverpool, and this year 1841, one or two cargoes have arrived from the Pacific. It is certainly highly to the credit of an English merchant, the enterprise which has thus led him to bring so many thousands of miles this long employed manure of South America. That it may succeed in adding fertility to the soils of our country will be the ardent wish of every true Englishman; that it promises well, no one will doubt who attends carefully to its chemical composition; and it is more than probable that by avoiding the application of it in quantities too small, and by the use of the drill, a valuable fertilizer will be added to the manures already in the English farmer's possession. But I would warn my agricultural friends not to be led away by idle assertions respecting its powers, such as that a single cwt. is sufficient for an acre of ground; from two to four cwt. is the smallest quantity that should be applied by the drill: let them beware too of adulterations—the price has already tempted the small dealers to mix it with other substances. There is only one course to avoid these, such as by procuring it of those who, like the London Manure Company, or Mr. Mark Fothergill, are above the practice of these frauds.—From *Johnson's Farmers' Encyclopædia*—now publishing.

THE CROPS AND THE CORN LAWS.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

SIR,—Although I have more than once said I should give up writing for your or any other paper, I cannot refrain from once more addressing you.

Two of my wheat crops, like others of this neighbourhood on sandy loamy soils, having so gone off in the spring as to be now, at harvest, very bad, I fancy that I may probably be doing some little good by communicating what I conclude has been the cause; and stating what is my intention to do this autumn to endeavour to prevent such a failure of crop another year. It is not only sustaining the loss, but it is somewhat mortifying in having one's land seen by persons travelling on our turnpike road, full of gaudy poppies and other weeds, as it is sure to be when crops fail. I wish that my present fine crop of carrots, beautiful crop of mangel wurzel, and best crop of Swede turnips, had been by the road side instead of these failing wheat crops. One of the wheat crops was on a one year's clover ley, the seed drilled in October; the other after turnips, the first week in December. On first discovering the thinness of plant in both the crops, I attributed it to the ravages of the wire-worm, but afterwards was convinced of being quite mistaken as to the one on the clover ley. In this there was no appearance of thinness of plant when the snow went away, after it had lain some length of time with severe frost. After this there was, for some time, severe frost with very high wind, without any snow on the ground; thus was the mould, on the highest parts of the field, turned into dust, blown away, and the roots of the wheat left so bare of covering as to be killed by the frost. On the low ground of the field, and by the hedge sides which were protected from high winds, are trodden down hard, and where the wire-worm is scarcely ever found, there was a good crop.

This field was ploughed last autumn by teams contending for our parish ploughing prizes. Being in Scotland at the time, I doubt if the seed was drilled in so deep as four inches, which has long been my orders that wheat should be on those parts of my farm where the soil is chiefly composed of sand. The ploughing was done in that way which is generally thought to be the best; which is, for the furrows to lay much on edge, but which I do not like when the seed is to be drilled in. When it is sown broad-cast it is right, because the harrows then catch plenty of mould to cover the seed; but when the seed is to be drilled, I feel assured that on land like mine it is best to have a thick furrow ploughed, and so turned over to lay as flat as possible; and thus when the seed is deposited in the earth by the drill, the land should lay quite solid, which is so necessary for the chance of a good crop of wheat.

Instead of having the land of my clover ley crop of wheat lay solid, from the manner it had been ploughed and managed, it laid so hollow that in walking over it about Christmas, in every footstep it sunk several inches; this was bad, but could not be remedied, for the roll could not then be used, nor would it then do to feed a flock of sheep on it. Daily driving a flock over it might have done some good. There was, I find, another thing against my having a good crop, the land was ploughed when *quite dry;* which a clover ley, intended for wheat, ought never to be.

I have harvested this year, off strong clay land of my farm, an abundant crop of wheat. On all such land in this district the wheat crops this year are best, but the wheat crops throughout the country cannot, I conceive, prove to be so abundant as they were last year, or the quality of the grain so fine.

I feel satisfied that the best way of putting in seed wheat on light land, is to use the presser constructed to follow two ploughs, which had they skim coulters put on them it would be better, thus a solid drill would be formed, into which the seed falls on being sowed broadcast; this will be my plan of wheat sowing this autumn, and intended should have been last. There is a presser machine that deposits the seed in the drill furrows at the time of making them. I understand, that in the state which seed wheat is on sowing, it is most difficult to have it run regularly; if it did do so, the seed would be more evenly put into the drills than when it is sown broadcast to fall into them.

The high frosty wind before mentioned had some effect on the crop after turnips, but the chief part of its failure, which was not one-fourth so great as in the other crop, was caused by the wire-worm, of which I have no doubt but that there are an immense quantity in the land. Could I soon get a sufficient quantity of the ammonia from the gas-works, I could kill them, and the land by the spring would so get rid of the poison infused in it as to nourish a crop. As I shall not I fear be able to get the ammonia, I must plough and stir the land as much as possible during the winter, for birds to pick them up—the frost to lay hold of some of them—not sow the land early with barley, and thus deprive them of food; this is all that I yet know can be done against these the farmer's greatest bane. The ridge system of turnip cultivation suits these abominable destructives. Mangel wurzel they much like; the fact is, the land which is the richest and freest from couch, is the most likely to be infested with them. It might reasonably have been expected that entomologists would, before this, have informed us of the natural history of the creature, that we might better know how to attack it; but in this science, as in many others that were to render great assistance to agriculture, expectations have not as yet been realized. I retain the same opinion which I formed many years ago, that, after being two years in the earth, it turns into one of the species of the hairy long-legged fly. An entomologist has said that mine is a mistaken notion, but has not said what it really does turn to. This I have great expectation will ere long be proved by an unscientific person I have lately had communication with on the subject, and is now making an experiment with them. If any one will, at this time of the year, on a fine day, look in a grass field, he will find hairy long-legged flies hovering about to deposit their eggs in the sheep-dung; they are easily caught; on inspection they are found with the body exactly alike to the full grown wire-worm.

Every one who wishes prosperity to British agriculture must at this time feel deeply interested as to the protection which the British growers of corn are likely to have from the importation of unneeded foreign corn; I, therefore, cannot close this letter without saying something on the subject. That there will be some modification of the present law, there can be no doubt; I wish it may be by lowering the scale, and taking the average of those prices which the growers obtain. In my opinion, the greatest enemies at this time to the agricultural interest are, those owners and occupiers of land who are opposed to any alteration.

All that the growers of corn ought to desire, and all they do desire who have right good feelings for their fellow men, is a fair remunerating, and, as far as it can be in the chief article of food, a steady price.

A fixed duty being advocated in preference to a sliding scale, by some exalted persons whose minds have long been directed, and time chiefly devoted to the general good, and whose opinion therefore must ever command respect, must create in the minds of those of humbler capacity and station in life, great doubts of the solidity of the opposite opinions which they may have formed; it therefore is with diffidence that I say, in my humble judgment, with a fixed duty of eight shillings a quarter on wheat, or in fact with any fixed duty, there would neither be a fair remunerating or steady price.

Although persons like myself may form pretty correct ideas as to the land which would be thrown out of cultivation, and the effects that would be produced in the agricultural community, by a fixed duty of eight shillings a quarter, so as to bring the price of wheat down to five shillings a bushel—which the master manufacturers want, and many have said is as much as it ought to be—we must well know that, on the corn question generally, taken in all its bearings and effects on the community at large, there are persons whose minds are so much more expanded, and whose situation in life qualify them to be such infinitely better judges in this most important of all questions, that I will not attempt to fully enter into the subject, but only here introduce some queries for such persons to solve, supposing wheat was five shillings a bushel, and all agricultural produce at a corresponding low price.

Near forty years ago, I gave my opinion in the *Farmer's Journal*, that the permanent price of wheat will ever be the standard of worth of every commodity in the kingdom; of the land, likewise, and of all the obligations due from one man to another, or from one class of men to another. Would not the national debt be greatly increased, were the permanent price of wheat so low as five shillings a bushel? For, although the nominal amount remained the same, the debt, from the increase of the obligation to pay the interest of it, must in reality become greater.

England, with its enormous national debt, is in an artificial state: it is only by artificial means that its prosperity can be continued, the chief of which is the continuance of the payment of the interest of this debt. It is said landlords must lower their rents. They are now probably calculated for wheat to be about seven-and-sixpence a bushel. If wheat is to be five shillings, there should be an abatement of one-third of the rent. I conceive that a great portion of the national income arises from the assessed taxes. Were the incomes of the landed proprietors reduced one-third, it would be impossible for them to continue their present establishments, or circulate the cash they now do for the benefit of trade; the national income, therefore, would be lessened, and trade depressed.

I will now state the consequences which would arise to the tenant farmer of good turnip-land, with wheat at five shillings a bushel instead of seven-and-sixpence; 'tis true the average these three years has exceeded that, but we will say that price, being, as I believe, without anything now before me to prove it, about the average of the past six years. Supposing his present rent to be 450*l.* per annum, he ought to make three and a-half rents; one landlord, one tenant, one and a-half for labour, taxes, tradesmen's bills, seed, &c., and interest of capital employed.* The annual produce of such a farm ought, in corn and in the profit on meat, to amount to 1,575*l.* If it was reduced one-third, by wheat being at five shillings a bushel, it would be 1,050*l.*, less thus by 325*l.* All that he would have to make up this loss, would be 150*l.* abatement of rent, and about 125*l.*, which would be the utmost that he could reduce in labour and tradesmen's bills: thus, instead of having 450*l.* a-year to maintain a family, and to put by annually a small sum to provide for it, and to secure the comforts necessary in old age, he would only have 250*l.*

If there was such a modification of the present scale of duty on foreign corn, so as to bring the average price of wheat to 6d. 6d. a bushel, which I think might be done by the sliding scale stated at bottom,† and there was a general abatement of ten per

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* *Vide* " Hillyard's Practical Farming and Grazing, 3rd edition, p. 126."

† Ports not to be open for the importation of foreign wheat till the average price shall exceed 54s. per qr. Then if not exceeding

55s.	....	20s. duty.	63s.	....	13s. duty.
56s.	....	19s.	64s.	....	12s.
57s.	....	18s.	65s.	....	10s.
58s.	....	17s.	66s.	....	8s.
59s.	....	16s.	67s.	....	6s.
60s.	....	15s.	68s.	....	4s.
61s.	....	14s.	69s.	....	2s.
62s.	....	13s.	70s.	....	1s.

No returns of averages to be sent in from Mark Lane, Birmingham, Manchester, Leeds, or any sea port; thus the averages will be the prices which the growers obtain.

cent. in rents, the present spirit in agriculture would be kept up, every effort would be resorted to, to make all the land now in occupation produce the most it is capable of; much land, yet laying in waste, would be brought into cultivation, thus affording additional employment for the increasing population; and thus the manufacturer's home trade, which is said to be their best, would flourish. I will not further lengthen out this long letter, but refer those who wish for more of my ideas on the corn laws to the four last verses of my song, lately published in your paper. For the last time, I subscribe myself,

Yours truly, C. HILLYARD.

Thorpelands, near Northampton, Sept. 8.

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Monthly Council held on Wednesday, the 1st of September; present—His Grace the Duke of Richmond, K.G., in the Chair; Colonel Austen, Richard Westbrook Baker, Esq., Thomas Raymond Barker, Esq., Henry Blanshard, Esq., French Burke, Esq., James Dean, Esq., and William Shaw, Esq.

The following gentlemen were elected Members of the Society.

Bissill, Edward, Sullerton, Boston, Lincolnshire
Cavendish, Honourable Captain, G.R.N., Lyne Grove, Chertsey, Surrey
Daniel, Thomas, Jun., Stoodley, Tiverton, Somersetsh.
Dean, Francis Keball, East Brent, Axbridge, Somerset.
Ford, William, Bailey Pit, near Monmouth
Gardner, William Wells, Biggleswade, Bedfordshire
Grose, Nicholas Male, Killibion, Gowe, Glamorgansh.
Ladds, William, Ellington, near Huntingdon
Lilley, James, Bassingbourne, near Royston.
Marindin, Rev. Samuel, Shanks House, Wincanton, Somerset
Wantelyn, Philip Endell, Amberley, near Monmouth.
Webb, Humphrey, Orslow, Newport, Shropshire
Willis, John, 22, Chapel St., Liverpool
Way, Rev. H., Henbury, near Bristol.

Mr. Raymond Barker presented the Report of the Finance Committee, which was read and adopted.

BRISTOL MEETING.

The Duke of Richmond, as Chairman of the General Bristol Committee, informed the Council of his intention to summon the Committee to hold its first Meeting on Tuesday the 5th of October, for the purpose of entering upon the consideration of the preliminary arrangements and organization of the general plans to be adopted under each department of the business of the meeting.

NEW SUBSOIL PLOUGH.

Charles Gabell, Esq., of Hollyfield, near Crickhowel, in South Wales, informed the Council, that having attended the Liverpool Meeting, and looked with interest on the trial of implements on that occasion, and especially on the operations with the subsoil ploughs, saw none of them which appeared to him of equal simplicity, economy of horse-draught, and efficiency, with a simple subsoil plough he had constructed for his own use in Wales. Mr. Gabell, considering that the six or even four horses required by the Deanston plough were not teams that many farmers on a small scale could command, and were precluded consequently from availing themselves of that valuable implement, regarded it of the first importance to have a plough equally efficient in its operation that could be worked with fewer horses; and stated that the one of which he sent a description to the Society was worked with two stout carriage-horses and could go when required eighteen inches deep, not however stirring the soil so much as those already in use, having no fin, nor moving *very* large stones, but easily breaking the crust formed by the sole of the plough, and making it pervious to the air and water. Mr. Gabell stated that, having only two horses, he used his new plough last spring after the harrow, first in the same direction as the furrow, next across it, and then diagonally (in the direction of corner to corner), and found that it completely loosened the soil, and appeared effectually to prepare it for the Belgian carrots (which at that time were doing as well as the season and other circumstances could give Mr. Gabell a right to expect). Mr. Gabell had also used it as a Sub-turf plough, and thought the implement still better calculated for that work, the resulting crop appearing to be so much increased by the operation that he intended to sub-turf most of the grass land on his farm. The Council having ordered thanks to Mr. Gabell for this communication, referred it to the Journal Committee.

GUANO MANURE.

Charles Alderman, Esq., of Kentbury, near Newbury, Berkshire, informed the Council that the Guano Manure, recently brought into notice at the Liverpool Meeting, was well known and estimated by the late Sir Joseph Banks, who recommended it as a powerful manure; and that many experiments were made on its effects by Major-General Beatson, who applied it to potatoes and mangel-wurzel.

FESCUE GRASS.

Mr. H. Lowder, of Harrington-street, Hampstead Road, presented specimens of the *Festuca Loliacea*, or Darnel-like Fescue, from grass land mown in the early part of the summer, accompanied by a written communication containing observations on the peculiarities of this grass. Mr. Lowder considered the failure of this grass in the perfecting of its seed to arise from the ravages of an insect, of the aphis or plant-louse tribe, from the circumstance of his having observed, on every ten out of eleven seed-stalks that he collected, the heads of many such insects closely embedded between the valves of the flowers, and obviously in the act of feeding, and most probably extracting the saccharine matter from the germ, which, in that manner injured, would necessarily become unproductive. Mr. Lowder considered that the attacks of an insect, the females of which, according to Réaumur, may each, in the course of five generations, become the origin of nearly six billions of such depredators, could not easily be guarded against; but that the grass in question possessed so many good qualities, that he thought it might be regarded as deserving of some attempts to enable it to produce good seed; and suggested that perhaps the first step to free the plant from the insect might be taken in promoting the flowering of the *Festuca Loliacea* at an earlier period than that in which the young brood of the insect is produced. Mr. Lowder concluded his remarks by hoping that others, more competent than himself, might be induced to extend their researches into the practicability of adding another valuable variety to our present not very extended list of Cultivated Grasses.

NOVA-SCOTIAN AGRICULTURE.

Messrs. James Robertson and James Royer Smith, joint-secretaries of the Annapolis County Agricultural Society, addressed a letter to the Council, expressing their desire to enter into communication with the Society, and transmit for its members such specimens of seeds as the province of Nova Scotia, from time to time, presented as suitable objects for the consideration of the Society, and worthy of trial in England.

Francis Clowes, Esq., of Hemsby, near Yarmouth, Norfolk, signified his intention of transmitting to the Society the results of his trials made this year with the nitrate of soda on wheat and barley.

Mr. Cuthbert Johnson presented the first part of his new work, entitled the *Farmer's Encyclopædia*, and Mr. Youatt the last number of the *Veterinarian*; the respective editors of the *Mark Lane Express*, *Bell's Weekly Messenger*, *New Farmer's Journal*, *Gardener's Chronicle*, *Magnet*, *Cambridge Advertiser*, *Essex Standard*, *Chelmsford Chronicle*, *County* (Hertford) *Press*, and *Hampshire Independent*, having presented during the session the consecutive numbers of their respective publications.

The Council then adjourned over a vacation of two months, to Wednesday, the 3rd of November.

COMMERCE AND THE CORN LAWS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—In a former letter I mentioned that the whole evil in our commercial intercourse arises from the circumstance of our articles of production being too high priced, in consequence of having been raised under a factitious value that was imposed on money by a paper currency, and by reason of that nominal value not having yet sufficiently fallen to meet the general market of the world. In support of this opinion, I quote a passage from a speech of Mr. Huskisson, which was spoken not long before the occurrence of the lamentable accident which deprived the British crown of one of its ablest advisers. He was the only man among our legislators of any designation, who seemed to know anything of the nature of trade. "Our corn laws," said he, "however expedient in preventing other evils in the present state of the country, are in themselves a restraint upon its manufacturing and commercial industry. Until the productions of that industry descend to the level of the general market of the world, the producers, so far as food is concerned, are debarred from that level. If the price of subsistence, that is, the price of particular articles which we never export, and are frequently compelled to import, be materially dearer here than anywhere else, that dearness cannot be shifted to the articles which we export. It must fall in the way of deduction, either upon the wages and comforts of the labourer, or on the profits of those who afford them employment." Mr. Huskisson advanced his opinions timidly and cautiously, as he well knew the furious opposition that prejudice and ignorance would array against him. He said it would require fifteen years from that time to bring about public opinion to his measures. We all recollect the outcry of the shipowners against reciprocity—it would ruin British shipping—the vessels would rot in the harbours, and we would even require foreign seamen to man the few that would be employed; and yet our shipping has regularly increased, and no such results have happened. "No human wisdom or knowledge," says Dr. Adam Smith, "ever can be found sufficient or capable of superintending and directing private industry to employments most suitable to the interests of society." A tax was imposed on wool which nearly ruined our export trade; the manufacturer was compelled to buy and use our British wools, which, without mixture with the finer growths of the continent, are unfit for manufacturing purposes, even for articles of home consumption; the tax was repealed—but not until we had lost a part of our export trade, and had taught other countries to retaliate and to manufacture for themselves. The price of wool has fallen certainly, but ample compensation has been obtained in the extension and scope of general industry, and sheep-farming progresses rapidly. The presumption is certainly great in any class of producers directing another where and at what price he must buy his raw material. Flax is imported duty free into Ireland, and yet the cultivation of that plant is increasing in that country.

Earl Grey expressly stated in 1827, that corn laws were enacted for the purpose of keeping up rents, and his opinion on this point accorded with his straightforward remedy for agricultural distress, a reduction of rent. That remedy was the only practicable one; and when free trade arrives, all the essays, speeches, and pamphlets will share the fate of their predecessors; for the whole confusion on both subjects arose from reasoning and building structures on false principles. The cardinal principle of our directors of trade is to export much and import little, to secure a balance of trade, to keep at home the precious metals, and to aid by bounties on importation and exportation. These reveries will soon be overthrown—the importing country is the richest and most thriving. When the precious metals go abroad, a value is obtained for them, and a similar value was given in order to purchase them for interchange in trade. Money would be of little use if confined to a corner or to the pocket of the owner. Such contracted views arise from considering mankind as so many hostile tribes, instead of one family working for mutual benefit. The British manufacturer has struggled successfully against the foreigner, merely by applying his superior skill, capital, and intelligence; the farmer has the same advantages, if he will use them; he has more capital and skill than the foreigner, better land, less expence in buildings, more effective implements, better roads and markets, and less distant conveyance, and gets more work done by a man in one day than by an unwilling serf in a week. The soil on the continent is weak in quality and incapable of bearing extended cultivation in wheat; a great production of raw material of any sort implies a great outlay of capital, which will only be advanced if it exists, and it will be expended only as the prospects of repayment are found to be encouraging. Great revolutions in agriculture are not the work of one or more years; wherever capital and labour are in abundance, much food will be required, and prevents any overflowing exportation. The land in England pays less direct taxation than in any country in Europe; and if free trade in every production was proclaimed without reciprocity, incalculable advantages would be derived; for any calculations for the future, founded on present circumstances of continental cultivation, must be very deceptive, as experience has proved on other points.

I am not one of those who suppose that free trade in corn or any similar single measure will relieve at once the miseries that afflict our population—a complication of causes must be considered; but it will establish a great primary principle, which with others will ultimately lead to a great physical and moral improvement in the condition of the human race. I was often surprised that the giant intellect of Canning could have reckoned catholic emancipation would prove a panacea for the evils of Ireland; the disease lies deeper than one or more acts can remove; a vote for an M.P., or any such privileges, would do little for persons suffering from the first wants of nature, and which must be relieved before any other step be undertaken. Such opinions shew that every man has his crotchets and prejudices, and are a warning to others to judge more cautiously, and to prophesy with less assurance. A very highly improved physical condition may be attained without a corresponding moral development; but no great mental excellence ever will be produced without an improved physical state; the natural wants must be supplied before the moral, and a generous animating diet must be the first of all considerations. If rich countries that are taxed beyond others, cannot compete with poor countries, then all trade would be stopped; but they are fittest competitors; for to protect a rich country against a poor one, or a rich man against a poor man, looks like reversing the established order of our system. But things, not mere opinions or measures, will prevail; a grievance must be long, and sensibly, and acutely felt;

for it seldom yields to any reasoning or principle, however ably enforced. The invention and application of steam, probably not yet half developed, have conferred far greater benefits on the human race than ever did legislators with their scales and regulations in whole centuries. Many vast powers may be slumbering in the womb of nature and ready to burst forth, which in their progress will trample in the dust all obstructive monopolies and the remnants of selfish feudal legislation. These are the things that will conquer—and against them, the opinions of the landlord, the priest, or the farmer, will be of little avail. The monopolists hold their usurped rights to be so sacred, that they suppose the people must think well on the subject before they overturn their privileges—just as the French nobleman of the old *regimé* solaced himself with the thought that the Deity would most assuredly think twice about it, before d——ing a person of his quality. But other powers have now risen, which cannot be confined; new systems must be adopted from the legitimate source of nature and reason, by receiving every new theory that agrees with that source, and by rejecting every old one that differs from it. RADIX.

August 25, 1841.

IMPROPRIETY OF SHOWING OVER-FED HILL SHEEP.

BY MR. WILLIAM HOGG, SHEPHERD, PEEBLESSHIRE.

Think ye, is there no danger of the Highland and Agricultural Society's annual show turning a market for fat stock? It has certainly been for some years approximating to that character; and what are the reasons? *First*, the cost, time, and trouble wasted in preparing the animals for the show, make it a matter of some importance to the owners to indemnify themselves while they are in a state to return some compensation. Their owners know that neither more beauty or fat can be added, and they well know that to keep them in the state in which they are shown is a moral impossibility; that if less care and feeding are given, a retrograde progress will immediately commence; and that there is no stopping declension until it terminates in disease or poverty. *Secondly*, their owners know that in the state to which their imprudence has pushed them, they are nearly useless for them; that if they decline ever so little, they cannot be brought to a high condition the second time; and that in that high state they are so encumbered with masses of fat, their perceptions so dulled and benumbed with an undue accumulation of this substance, that they are nearly extinguished, and in many cases the females become positively barren.

Where castrated or spayed sheep are selected for feeding, and the plan of preparation for either the show or the shambles is nearly the same, as fat is necessary in both cases—in the former to conceal defects, in the latter it is the only excellency; but where the sheep which are shewn have already produced a blameless issue, and are exhibited as stock apparently designed to breed from, it is certainly not consistent to put an immediate termination to their lives, by turning them over to the hands of the butcher.

The ewes which gained the premium for that description of stock at the Society's last show at Aberdeen had, no doubt, formerly produced good stock, and if they had been allowed to pasture on their native range, their produce would still have been good; but the day they were chosen from among their neighbours to be fed, there was an end of all right management for hill sheep, or sheep of any kind designed to have any independence in their appearance or habit. If they were not fed, dressed, and tormented till their perceptions, whether natural or acquired, were totally obliterated, they were at least disabled, both by nature and taste, to rejoin the stock of which they once were a valuable and integral part; they were hurried from the show-yard to the bughts, and from the bughts to the butchery. In such a case, does not the Society give premium for the premature extinction of valuable lives? Their owner cannot be blamed; he only did what the regulations of the Society allowed him to do. It is not the brief and noisy applause of the speculative, acquired by gaining a premium, that can be of lasting advantage to the home stock; and, indeed, it is right it should be so. The brief applause of the multitude may suit the theoretical man, or the man who loves to prattle over a list of reputed rams which have brought him premiums, and which he reckons has dignified and enhanced the value of his stock: to such ebullitions few give any heed. But the wholesale dealer, who annually takes off the extra sheep and rams, looks farther into the matter; he knows that the yearly sales from a farm have but little resemblance to those fed and dressed for a premium, either in figure, fat, or wool; it is the reputation which the stock has had before ever premiums began to be offered, in conjunction with the present character they have for animation, soundness, firmness of constitution, sobriety of habits, and disposition to fatten, that constitute the permanent and public character of sheep stocks; and sheep with such excellences will always be inquired after, and take the top of the market, whether they have ever gained a premium or not.

To prevent all unwarrantable preparation, sheep should be shewn directly as they come from their neighbours on the hill. They would then be an exact specimen of the stock left behind; their owner's tastes for a right shape, and his ability in arranging and sorting a stock, would then be apparent. But in the present state of things, the effects of the diligence and punctuality with which they have been fed, and the richness of the ingredients on which they have been pampered, hide all deformities, and even some excellences. A public exhibition of sheep, without any artificial emendations, would then be a disclosure, at a certain point, of a complicated course of management; as the condition in which the animals appeared, might be safely inferred the state in which the pasture had been kept. Sheep bred and grazing on unimproved pasture have a coarseness and inelegance in their figure, a wildness in their manners and aspect, which the human mind takes no pleasure in contemplating, yet can hardly condescend on what these unpleasant traits consist. But sheep from improved pasture have a composure and sweetness in their figure and look; their eye meets the human eye with a mildness and confidence; and man, pleased with the confidence which the harmless creature seems to repose in him, desires a nearer approach, that he may examine with his hands the softness of its coat and the uprightness and firmness of its joints; and if the animal is in a fold among its neighbours, to this nearer scrutiny it makes little resistance. All this agreeableness in the animal proceeds from man's endeavours to sweeten and enrich the pasture, which is no sooner accomplished than sheep imperceptibly lay aside their former rough appearance, are grateful to man for his kindness, assimilate themselves more to his wishes, and this without any direct interference to amend the form or shape as a breed. The luxuriance and luscious quality of the new grasses which the owner has brought into existence by rightly improving the pasture is alone sufficient for this change. Hence, in shewing sheep in their native habit and native dress, one may have as just a specimen how they are accommodated at home as if the pasture were inspected from end to end. Shewing them in a fed state makes the world sure of nothing but that much cost and diligence have been bestowed on them, in furnishing them with food which the hills, unaided by agriculture, never can produce; and that, when the stomach is gorged with one luxury, which it often is, recourse is immediately had to another, till the poor creature is swelled to excess, its very life being uneasy to itself. I shall merely add, that sheep shewn directly from their native hills would return to their accustomed range with their taste unvitiated, their instincts and perceptions uninjured; they would still be proper subjects to breed from, and the preference acquired by being publicly exhibited would extend its honours to all the stock of which they are a constituent part. But in the present manner of managing business, the glory, if any, is confined to the few pampered animals which the owner, in many cases, delivers over as quickly as possible into the hands of the butcher; then, with one thrust of the butcher's knife, the life and excellences of the animal are all brought to a termination.

I readily grant that sheep would make but a sorry appearance, if new shorn, in an unfed and undressed state; but this inferiority would never have been so apparent, had the spectators not been accustomed to see sheep in an exorbitant habit; besides, it is upon the home stock that the owner founds his profits. Sundry of the most permanent of the excellences of the shewn animals are merely artificial, and, though still retained for propagation, can never be communicated to the home stock; and it is beyond all the art of the store-master to make the world believe that his stock at home possesses, even in a remote degree, the valuable qualities of those shewn.

In the Society's regulations for the show at Berwick this year, is the following standing rule:—"Stock which may have received oil-cake or grain are not excluded;" but the Society should have considered that both these articles may be administered in another form, or they may be compounded with other produce of the farm, so as to form a nourishing and delicious repast. Sheep are naturally very gluttonous, and can be brought—and very easily brought—to feed on any kind of aliment adapted and generally used for the human stomach.

I hope the Society will, at no great distance of time, see the uselessness (I shall here give it no worse epithet) of giving premiums for over-fed hill sheep, or even for sheep that are indulged with any other food but what they gather from their native mountains. If they give allowance for extra food, they may depend upon it that the indulgence will be taken both by the feeders and the animals fed.—*Quarterly Journal of Agriculture.*

THE CORN LAWS IN 1600.

[CURIOUS DOCUMENT.]

SIR,—A few days ago, whilst I was occupied in making some historical researches among the manuscripts in the Bodleian Library, I met with a document, which I found on perusal to be an order from the Lords of the Privy Council for the regulation of the prices of corn as early as the year 1600. Perhaps the present general excitement on the question of the corn laws may impart some degree of interest to this document, and I have taken the liberty of sending a copy of it for your inspection. It would of course be almost impossible to say how far it may prove an argument either on one side or the other, without a very full consideration of all the circumstances which gave rise to it; but it will be perceived that at that time it was considered of more consequence to prevent the exportation of corn out of the country, than to place any restriction upon its importation. It affords us, however, a ground for conjecturing, that if the present restrictions were removed, a similar state of things might result, if the superiority and extent of cultivation have kept pace since that period with the increase of population.

"TO OUR LOVING FRIENDS, THE HIGH SHERIFF AND JUSTICES OF THE PEACE IN THE COUNTY OF NORFOLK.

"After our hearty commendations; Her Majesty being informed of the sudden raising of the prices of corn to so high and excessive rates, hath that tender care of the poor sort of her loving subjects as do most grievously feel the burden of these high prices, as she hath commanded us to take some speedy and careful course that the markets may be duly served, and the prices brought down by all possible means to some reasonable rates for the relief of the subjects. Having therefore considered of these sudden and extreme high prices after so great plenty as was this last year, we cannot impute it but unto the greedy disposition of gain in the corn-masters, and some causeless doubt of unseasonable weather. And albeit we see no cause why the prices of grain should at all be raised, yet considering, nevertheless, Her Majesty's great care and princely disposition for the good of her subjects, especially for the poor sort, we have caused special orders to be set down for the service of the markets, and restraining of badgers, regraters, and such other means as a cause of the unnecessary rates, and enhancing the prices of corn, which we do refer to your care to see the same duly executed. And whereas it is suggested that this dearth cometh by reason so great quantity hath been transported out of the realm, it is a malicious slander, for long since Her Majesty hath taken order that no corn shall be transported into foreign parts. Of your proceedings herein we look to have particular certificate from such as shall take pains in this charitable work; that Her Majesty may be informed of the fruit that shall come of your labour and care, and also what justices shall assist this service, wherein such may be forborn as are engrossers or buyers of corn to the intent to sell the same again, because it is intended that there shall some under order be taken, both against such as commit that abuse, as also against those that do countenance any that use those unlawful means; whereof we require you to have special regard, and to cause these our letters to be openly read, that Her Majesty's care for the relief of the poor and bringing down excessive prices may be known to all persons. So we bid you heartily farewell. From the Court of Greenwich, the first of June, 1600."

In copying the preceding documents, I have not retained the cumbersome orthography of the time, because it is of no importance in a philological point of view, and serves to perplex the reader.

I am, Sir, your very obedient, humble servant,

August 11. J. O. HALLIWELL.

LIVERPOOL, September 1.

Assuming the year to end, as regards the corn trade, with the month of August, the following table will be found to contain statements of the yearly imports of Wheat, Flour, Oats, and Oatmeal into Liverpool—the quantities of the three first from abroad on which duties have been paid—the vend of each article during the last twelve years, and of the stocks, free and in bond, together with the range of prices at the close of each of the series. With respect to the stocks, those free are stated according to the estimates of the several periods: those in bond as made up from the daily Bills of Entry issued by the Customs.

	WHEAT.								FLOUR.							
	IMPORTS.			Foreign & Col. duty pd.	Home vend.	Exportd Foreign.	STOCKS.		IMPORTS.			Foreign & Col. duty pd.	Home vend.	Exportd Foreign.	STOCKS.	
	British. Qrs.	Col. Qrs.	For. Qrs.	Qrs.	Qrs.	Qrs.	Free Qrs.	In bond. Qrs.	British. Sacks.	Col Brls.	For. Brls.	Brls.	Sacks	Brls.	Free. Brls.	In bond. Brls.
12 mo's endg. 31 Aug. 1830	267280	9821	193164	218702	405982	2769	130000	none	96950	6618	233209	243224	139805	31710	190000	none
Range of prices on do do	8s 9 - 10s 8s - 9s	8s 9-9s10		6s 6 - 10s				6s 9 - 9-	49s-50s 46s-48s	30s-33s		30s-35s				30s-32s
12 mo's endg. 31 Aug. 1831	266619	93422	336026	327520	614169	4380	110000	97548	80026	20285	675834	405220	461680	36499	50000	254100
Range of prices on do do	7s 3 9s 9 6s 6 - 8s	8s 3-9s 3		7s 3-9s 9				5s 9 - 7s	46s-48s 41s-45s	33s-35s		34s-37s				21s-24s 6
12 mo's endg. 31 Aug. 1832	418154	49958	44537	14400	197854	43177	45000	134166	164007	33001	66192	24570	216206	65453	noml.	263570
Range of prices on do do	8s - 9s 6 6s 10-8s 6	6s - 9s 4		7s - 9s 6				4s - 5s 9	48s-50s 46s-49s	30s-34s		32s-34s				15s-23s
12 mo's endg. 31 Aug. 1833	459802	45728	9078	74900	479702	8902	100000	105170	288938	25598	12940	39440	296546	77481	Sacks 20000	185187
Range of prices on do do	8s - 9s 6 7s - 8s 6	8s 2-9s 4		7s - 9s 6				5s - 6s	45s-46s 43s-45s	33s-35s		34s-36s				19s-27s
12 mo's endg. 31 Aug. 1834	393812	31454	47652	31700	365512	50592	160000	101984	258092	27833	30433	27900	267622	81786	30000	133767
Range of prices on do do	6s - 7s 6 5s - 6s 3	6s 6-7s 4		5s - 7s 3				3s 9 4s 6	38s-40s 33s-37s	27s-28s		30s-32s				18s-27s
12 mo's endg. 31 Aug. 1835	296775	19731	16830	none	326775	20854	130000	117691	276323	5608	7941	none	286323	32235	20000	115081
Range of prices on do do	5s 6-6s 8 5s - 6s	6s - 6s 4		5s - 6s 6				3s - 4s 3	36s-37s 30s-35s	25s-28s		25s-30s				19s-26s
12 mo's endg. 31 Aug. 1836	327103	105	58789	none	317103	35872	140000	140713	291591	1012	52741	none	304591	74247	10000	94587
Range of prices on do do	6s 10-8s 5s 9-7s 4	6s 9 - 7 4		6s - 7s 9				4s - 4s 10	40s-42s 35s-40s	28s-30s		..				22s-25s
12 mo's endg. 31 Aug. 1837	191925	472	129542	8231	270156	98603	70000	163893	229967	16006	61785	16006	241173	87770	10000	68602
Range of prices on do do	6s 10-9s 5s 4 7s 4	7s 9-8s 6		5s6-8s10				3s 6-4s 6	43s-47s 38s 45s	30s-32s		..				19s-22s
12 mo's endg. 31 Aug. 1838	215668	..	104494	51374	322043	68236	15000	148777	336851	9049	52885	13119	346040	56506	10000	60911
Range of prices on do do	10s-11s 6 9s - 10 9	10s - 11s		9s6-11s3				8s 6-10s	60s-63s 52s-60s	40s-42s		..				31s-40s
12 mo's endg. 31 Aug. 1839	228797	..	508071	594410	748207	1225	90000	61213	152628	17261	212893	251104	331609	23890	4000 Brls 4000	16071
Range of prices on do do	9s - 11s 6 8s - 9s 9	..		7s6-11s3				7s 6 - 10	56s-57- 50s-56s	..		32s-40s				30s-31s
12 mo's end. 31 Aug. 1840	215689	500	367189	295530	576219	164	25000	133208	54105	49908	459391	362595	311224	31096	5000	131679
Range of prices on do do	7s - 10s 9 5s 9-8s10	..		8s - 10s 4				7s 3 9s 3	53s 55s 40s-47s	33s-34s		32s-35s				28s-32s
12 mo's end. 31 Aug. 1841	222693	29603	229936	269286	501979	†2544	15900	120917	81213	220080	235973	415860	339815	†31775	1000sk 50000b sweet & sour	140097
Range of prices on do do	9s6d-11s 8s3d-9s9			9s3-10s9				7s9d-9s6	50s-56s 48s-54s			35s-38s				33s-31s

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* In the columns containing double rows of prices, the upper row is the range for English produce (including under that denomination, Welsh, Scotch, and Manx,) the under row gives the range for Irish Wheat and Flour. The prices for British Oats and Oatmeal refer exclusively to Irish.

† Of the Wheat and Flour entered in the exported foreign column, for the year ending 31st August, 1841, the Wheat was sent under bond to Ireland, and 500 brls. of the Flour under lock to Greenock.

	OATS.					STOCKS.		OATMEAL.		
	IMPORTS.		Foreign Duty paid.	Home vend	Exportd Foreign.	Free	In bond.	Imports British.	Home vend	Stock Free.
	British. Qrs.	For. Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Loads.	Loads.	Loads.
12 mo's endg. 31 Aug. 1830	460121	29457	43750	508871	5319	50000	none	108714	108714	noml.
Range of prices on do do	2s 8-3s10		3s 2-3s 8				2s 10-3s 1	32s-34s		
12 mo's endg. 31 Aug. 1831	391750	67253	48700	470450	..	20000	18553	133886	153886	noml
Range of prices on do do	3s 1-3s 2		2s 10 3s 3				1s 9-2s 4	24s-26s		
12 mo's endg. 31 Aug. 1832	460532	2785	3660	444192	..	40000	17678	180410	135410	45000
Range of prices on do do	2s 5-2s 6		2s 4-2s 5				1s 3-1s 6	21s-22s		
12 mo's endg. 31 Aug. 1833	368357	80	none	358357	6878	50000	10880	208468	183468	70000
Range of prices on do do	2s 7-2s10		2s 5-2s 7				1s 9-2s	22s-23s		
12 mo's endg. 31 Aug. 1834	311766	3820	none	321766	3130	40000	11570	143375	163375	50000
Range of prices on do do	2s 6-2s 8		..				1s 10-2	19s-22s		
12 mo's endg. 31 Aug. 1835	227783	3003	none	267783	4643	noml.	9930	137020	187020	noml.
Range of prices on do do	2s8-2s10		..				1s10-2-4	22s-24s 6		
12 mo's endg. 31 Aug. 1836	315364	18523	4400	309761	10497	10000	13556	193431	153434	40000
Range of prices on do do	2s 11-3s2		3s-3s 6				2s-2s 6	25s-26s		
12 mo's endg. 31 Aug. 1837	266023	41000	26440	297468	13752	5000	14364	166268	186268	20000
Range of prices on do do	2s 8-3s 2		2s 11-3s6				2s 3-3s	23s-27s		
12 mo's endg. 31 Aug. 1838	326145	20917	12310	333495	14972	10000	7969	301059	251059	70000
Range of prices on do do	3s 5-3s 7		3s 2-3s10				2s 6-3s	26s-27s		
12 mo's endg. 31 Aug. 1839	290995	26921	26843	324838	8047	3000	none	213107	280107	3000
Range of prices on do do	3s 10-4s8		3s 9-4s 3				3s-3s 6	35s-37s		
12 mo's endg. 31 Aug. 1840	257468	44259	24442	269910	6937	10000	12880	233516	226516	10000
Range of prices on do do	3s 6-3s11		3s 9-4s 2				3s 9-4s	32s-34s		
12 mo's endg. 31 Aug. 1841	269666	19749	15529	275195	4970	20000	12130	276475	251475	35000
Range of prices on do do	2s11-3s2		3s-3s 4d				2s10d-3s	21s-25s 6		

Average of eleven years' imports ending with August, 1840:—Barley, British, 57,733 qrs.; foreign, 1,677 qrs. Rye, British, 1,699 qrs.; foreign, 4,406 qrs. Beans, British, 23,777 qrs.; foreign, 11,491 qrs. Peas, British, 3,345 qrs.; Colonial, 4,288 qrs.; foreign 10,541 qrs. Malt, British, 82,672 qrs.

Imports for twelve months ending August 31, 1841:—Barley, 54,641 qrs.; foreign, 7,407 qrs. Rye, British, 465 qrs. Beans, British, 14,655 qrs.; foreign, 52,433 qrs. Peas, British, 4,216 qrs.; foreign, 20,868 qrs. Malt, British, 77,131 qrs.

Stocks, free, on twelve months ending August 31, 1841:—Barley, 1,000 qrs.; Beans, 2,500 qrs.; Peas, 3,000 qrs.

Stocks, in bond, on twelve months ending August 31, 1841:—Barley, 3,550 qrs.; Rye, 1,897 qrs.; Beans, 41,263 qrs.; Peas, 4,115 qrs.

On reference to the above details it will be observed that the aggregate home-vend of Wheat and Flour for the year just closed does not materially vary from that of the preceding twelve months, nor do we find that our prices for Wheat had fluctuated (during the period first named) to the extent of more than 5s. to 6s. per qr. until about the middle of the past month, when a series of untoward weather caused an advance, over the average of the previous part of the season, of 12s. to 13s. per qr. in the value of Wheat and 6s. to 7s. per sack in that of Flour. A favourable change in the weather; an accession of 18,700 qrs. of Canadian Wheat and 87,400 brls. of Flour to the free supplies; together with the certainty of an early release of the foreign Wheat and Flour at a very low rate—if not the lowest point—of duty, have since caused a reaction; our quotations however still range from 10s. 6d. to 11s. for English white, 10s. to 10s. 4d. for red, 10s. 3d. to 10s. 9d. for high mixed Danzig, 9s. 9d. to 10s. 3d. for Lower Baltic red, 9s. 6d. to 10s. 3d. for Canadian red and white, 9s. 6d. to 10s. for American, 9s. 4d. to 9s. 9d. for the general runs of Mediterranean, 8s. 9d. to 9s. 6d. for Odessa soft, and from 8s. 9d. to 9s. 3d. per 70 lbs. for the better qualities of Irish red Wheat. No new has yet appeared at market. The large supply of Canadian Flour has depressed the prices of that article 3s. per brl.—sweet parcels of the best brands not being worth more at this moment than 36s. to 36s. 6d. per brl. United States sweet may be quoted at 37s. to 38s. per brl. Nearly the whole of the stock at present on the free market—estimated at 50,000 brls.—consists of Canadian and by far the greater proportion of that is sour—which is selling slowly at 32s. to 33s. per brl. Of free Wheat it will be seen there are not more than 15,000 qrs. remaining over.

Under the influence of the causes already named as affecting Wheat, (which indeed have had more or less influence on each article of the trade,) our prices for both Oats and Oatmeal were, a fortnight ago, considerably enhanced; Oats advancing to 3s. 9d. per 45 lbs., Oatmeal to 32s. per load. These rates, however, attracted increased quantities to the port [about 10,100 loads of Oatmeal were brought from Glasgow] and the decline has been as rapid as the rise. With this exception the supply of, and demand for, both articles had throughout the season kept very much on a par, and, consequently, no material variation had occurred in their value. Irish mealing Oats may now be bought at 3s. to 3s. 2d.; Welsh common at 2s. 9d. to 2s. 11d. per 45 lbs. Oatmeal at 25s. to 25s. 6d. per load. A few Irish new Oats have appeared—quality fair—and have sold at 3s. 2d. per 45 lbs.: a little Oatmeal at 30s. to 31s. per 240 lbs.

The malting season closed with a very small stock of Barley suitable for that purpose, and, the subsequent supplies having been small, the demand for grinding has sufficed to keep the market pretty clear: in fact, at one time during the past month, there was so little offering that 5s. 9d. to 6s. 3d. per 60 lbs. was obtained for good sweet foreign: the sales since have been quite of a retail character, and our present prices range 4d. to 6d. per bushel below these rates. Indian Corn, of which there are two or three parcels in warehouse, is held at 38s. to 40s. per 480 lbs., but meets a very limited demand. There has been a steady trade in good and prime qualities of Malt, at prices varying from 56s. to 64s. per imp. qr., but anything inferior has moved with great difficulty, though offered at several shillings per qr. under these quotations.

The free stocks of both Beans and Peas are small, but of foreign, under bond, it will be observed there are 41,263 qrs. and 4,115 qrs., respectively: those of Beans consist chiefly of Egyptian, and both may be expected shortly to come upon the free market. Fine English Beans are at present worth 45s. to 47s.; foreign small, 44s. to 46s. per imp. qr.; Egyptian, duty paid, 38s. to 39s. per 480 lbs. Canadian Peas, of which the quantity on hand principally consists, have sold at 39s. to 40s.; English boilers are worth 44s. to 46s.; foreign, 42s. to 44s. per imp. qr.

In our report for July we had occasion to state that considerable business had been done in bonded Wheat and Flour, with the effect of advancing prices 1s. 6d. to 1s. 9d. per bushel, and 5s. to 6s. per brl.; this was followed by large transactions during the succeeding fortnight at almost daily increasing rates; 9s. 6d. to 9s. 9d. being ultimately paid for choice Baltic red, 10s. per 70 lbs. for a superior lot of Danzig, and 35s. to 35s. 6d. per brl. for United States Flour. Our present quotations, at which holders are firm, rendered more so by the almost certainty of the duty falling to the lowest point, rule 6d. a bushel and 1s. 6d. a brl. below these rates. Most of the Egyptian Beans have gone into second hands, and are now saleable at 28s. 6d. to 29s. per 480 lbs.

With the exception of one or two wet days the weather during the last fortnight has been fine, and in the southern counties considerable progress has been made in harvest operations, which are also proceeding favourably in this district. A small portion only of the produce of the kingdom, however, has yet been secured. The reports we have from the different parts of the country as to the Wheat crop are more than usually various; the majority, however, leading to the opinion that it will prove under an average both as to quality and yield, an impression borne out by many samples that we have had the opportunity of seeing; in fact no doubt seems to be entertained of a large quantity of old Wheat being required, and our present bonded prices cannot therefore be considered otherwise than perfectly safe. Oats are generally reported to promise well; the Barley too is of great breadth, but much lodged and expected to be of coarse quality.

JOSHUA WALMSLEY AND CO.

TILE DRAINING.

TO THE EDITOR OF THE AYR ADVERTISER.

SIR,—The propriety of tile draining is now so generally admitted throughout Scotland, that almost all adopt it as a means towards improvement, in a greater or lesser degree, who are within reach of the necessary materials for executing the work: and a great many without taking it into consideration whether a return will be had for the capital expended, or making it their study to adopt the best method of cutting and filling the drains. Numbers rely on the correctness of the assertion, "that furrow draining, in all soils, is calculated to effect uniform and complete dryness; and, when coupled with subsoil ploughing, renders the most sterile land fertile and profitable;" hence the inference has been drawn that all that is necessary in order to obtain these important ends, is to begin and drain right on. Our object is to draw the attention of those who are expending their capital in that way, to some of the details connected with this important improvement.

In the various and numerous soils rendered wet and unproductive by the water rising from below, or falling upon the surface in the shape of rain, all of which require to be drained, so that the water rising from below, may be drawn off before it reach the surface, and frequent opportunities provided for the rain water to escape; to follow out any general rule in draining these different soils, will be attended with many disadvantages.

Before commencing operations, it is at all times necessary to examine the soil to be drained, so as to ascertain the cause of the wetness, and it will almost be invariably found that, in deep marshy soils that grow sprits and strong rushes, especially if the field be interspersed with portions of dry ground, that the wetness is caused by springs: in general they will be found at the edge of the dry ground, rising to the surface, and consequently flowing over the lower soils; and to intercept the water rising from these *springs* in its course towards the surface, is all that is required to drain land of this description. The greatest skill and attention are therefore necessary in staking off the drains; as the running them in a wrong direction will render them in a great measure useless, however near to each other they may be. It should always be kept in view that the object to be obtained, is to draw the superfluous water from the surface at the least cost, and no regard ought to be paid to the regularity or frequency of the drains; and it will be often found that eight or ten roods, of 36 yards, will be sufficient to drain an acre. The cost per rood will be considerably more than the frequent drain system, as they will, in general, be required to be cut much deeper, often three or four feet; and, if laid with a tile upon a good sole and six inches of small stones on the top of the tile, will make a capital drain. The cost of the material and the labour required to finish a rood, will probably amount to 9s. 3d., and if 10 roods in an acre, the total cost per acre will therefore be 4*l.* 12s. 6d. The best place to run the drains will be a little above the springs between the wet and the dry, as the springs in general escape at the crop out of some of the mineral strata; and, by cutting the strata a little to the rise of the spring, will be certain to intercept it. This is a kind of land that is sure to yield a large return for the capital expended in draining; as it will yield several good crops after undergoing this process, without much labour, or any manure (lime excepted), and when again laid down in grass, will grow abundance of good herbage.

A great portion of good land, with an open subsoil, incumbent on beds of clay or other impervious layers, is often rendered wet and unproductive; not by water rising from below, but from water falling upon the surface in the shape of rain, and rendering both soil and subsoil wet, so that the working of it is often difficult and precarious, and the crops prove scanty. To provide opportunities for the water to escape off this land, will require a different system altogether from that adopted for draining the land intersected with springs. The drains should be cut at equal distances and run in parallel lines to each other, and may be 20 or 24 feet apart, and two or two-

and-a-half feet deep, according to circumstances connected with the nature of the soil.

Land of this description is often laid up in pretty high ridges, sometimes 10, 12, or 14 feet wide, and the drains are in general cut in the direction of the ridges, either in each or every alternate furrow, or at equal distances, without regard to the furrows; but in general the drains are made at a distance from each other, so as to suit the position of the furrows. If a drain is made in every furrow and the ridge under 20 feet wide, as is often the case in land of this description, so much capital is expended more than is necessary. Running the drains too near each other, and putting one in every alternate furrow, is also attended with its disadvantages; as the furrows between the drains, when levelled in, will retain the water long, and be in a thoroughly wet state before it escapes into the drains: and, as to running the drains at equal distances without regard to the furrows, it is the worst method of all; inasmuch as the drains will be sometimes in the middle or high part of the ridge, and sometimes in the furrow, and it is difficult to know how to cut them so that they will be of an uniform deepness when the ground is levelled. The chances are that some will be too deep and some too shallow; and part will be injured by the subsequent ploughing by being too near the surface; the water will also escape slowly out of the old furrows into the drains. Thus the system recommended, where it is not altogether answerable to cut a drain in every furrow, is in the first place to endeavour to ascertain what is the greatest distance the drains may be apart, and at the same time sufficient to dry the ground. The next thing is to stake them off in a diagonal direction, intersecting the furrows at an angle of 45 degrees, more or less as circumstances dictate. The main drain should run up the centre of the field, and in a situation where the common drains will run right and left into it. This method may be objected to, as by running the drains across the ridges in a slanting direction, and through an uneven surface, it will be difficult to preserve a regular slope in the bottom of the drains; as one part will require much more cutting than others, and will be attended with additional cost. This difficulty is easily got over, as when stripping or taking off the first spading, it can be done so as that the subsequent cutting will be of nearly a uniform depth. If an acre can be made dry with two roods of less drains by this method, the cost of the tile saved in these two roods will pay all the additional expense of cutting. But in general, much more than two roods will be saved. If the drains in land of this description be judiciously and carefully made, a very fair return may also be calculated upon for the capital expended; and the ground may be all laid down without ridges, which will much improve the appearance of the field.

A great portion of the arable land in this country, being stiff clay with a hard impervious *till* subsoil, it is greatly injured by the tardy and imperfect escape of the water falling on the surface, especially in winter, and during the spring months; and from the water *souring* it, it becomes hard and obdurate in summer; and to provide frequent opportunities for the water to escape, so as to keep the land in a more uniform condition, may certainly be esteemed a great improvement. If profit is to be taken into account, it certainly cannot be out of place to calculate, before commencing operations, what is the least possible expense an acre of this kind of land can be drained for; and also to consider what its effect may be on the soils. Some active soils are of so stiff and impervious a nature, that a small portion of it on the top of the drain will prevent the water from escaping away; and the subsoil being so very hard and impervious, prevents it from getting in at the sides: hence all these circumstances should be considered, so as to arrive at a proper data to judge whether it would pay or not.

Clay land is in general laid up in pretty high ridges of about 14 or 15 feet wide, which is very answerable to run a drain up every furrow, being about the proper distance, and will also save something in cutting, from the drains being in the bottom of the furrows. If the subsoil be so hard that neither the rain water will filter through it, nor water run from below, which is in general the case in stiff clay soils, the drains should not be deep, probably about 16 inches, which depth will allow six inches for tile and sole, and four inches of a crust between the bottom of a furrow six inches deep and the tile. The bottom of the drain should be made so as to be 16 inches below the surface of the ground when levelled. The tile should be neatly covered with a thin sod, green side down, and a strong furrow turned out the middle of the ridge to fill up the drain, as the soil in the high part of the ridge is more porous, and will then allow the water to percolate more freely. It is the practice of some, in the subsequent ploughings, to keep the drains in the middle of the ridges. This we think should not be done; as the object aimed at is to provide frequent opportunities for the rain water to escape: and to place the drains so that in clay soils the water will run off the surface of the ridges into the furrows rather than filter into the drains, and run down the furrows out of the field altogether, before it percolates into the drains, is a situation where they are very likely to effect little good. To keep the drains directly under the open furrows is also a method which cannot be approved of; as direct openings into the tiles are apt to be made, which in a short time would admit as much soil into them as would choke them up eventually. To obviate these disadvantages, the ridges should be laid off so as to cross the drains in a diagonal direction, and the water will run down the furrows cross the drains, and will have frequent opportunities of escaping into them. In fields where it would be inconvenient and unhandsome to alter the directions of the ridges, the drains should be cut in a diagonal direction across the ridges, so as to secure the furrows crossing them when again ploughed, and keeping the ridges in their original direction. To those who approve of subsoil ploughing, it is very convenient also, on that account, to have the drains in a diagonal direction, as the subsoil plough should always cross them as nearly at right angles as possible, and in a direction up and down the steep, so as to secure a good fall for the water to run down the track of the plough into the drains.

In land properly drained, and intended to be laid down for permanent pasture, ridges are unnecessary, although a little difficulty is caused in sowing and reaping; but a slight rut with a single-horse plough will serve to regulate both sower and reaper.

The size of tiles commonly used are 14 inches long and three-and-a-half inches deep, by three inches wide, and are generally sold at 27s. 6d. per 1000. A tile of this size is sufficient to run the water off a ten-acre field. A much smaller tile, and, consequently, a much cheaper one, is sufficient to answer all the purposes in frequent draining; but the tile-makers are averse to alter either their size or their price: however, some of them are now giving way, as tiles of common length, and a smaller size, can be had this year in this neighbourhood, (at Wishaw) for 20s. per 1000, which is a saving of 20s. per acre. R.

Lanarkshire, Aug. 24, 1841.

THE CORN LAWS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—A correspondent in your paper of 30th March, 1840, remarks, "that the corn law repealers for the sake of obtaining their object (and to appear consistent,) desired to abolish all the prohibitory system, and to make trade as free between this nation and another as between one English county and another, and to sweep away all the protective laws for commerce, manufactures, and shipping, sugar growing, and colonial trade, fisheries, freights, and navigation laws." A few days afterwards, Sir Robert Peel said in Parliament, as reported in your paper of 6th April, 1840—"If the principle now contended for was good for the regulation of the trade in corn, it was good for the trade in many other articles; if good as affecting labour upon this principle, there ought to be no navigation laws. Every merchant ought to be allowed to procure labour at the cheapest possible rate, and there ought to be no preference for the British seamen. But the legislature controlled that principle, just in the abstract, by a reference to the necessity for providing for the defence of the country in case of danger. It was found beneficial to encourage our own marine, and to endeavour to secure the maritime eminence of this country by a protection to its marine. Therefore, in this instance, the legislature corrected the principle, however good it might be in the abstract, by giving a preference to the seamen of this country. Besides, if the principle was to be applied generally, the whole colonial system must be altered. Foreign sugar must be entitled to admission into the home market on terms equally favourable with the sugar of our own colonies. The timber duties must of course be got rid of; every protecting duty on manufactures must be abolished precisely on the same principle on which it was argued, that there ought to be no protecting duty for corn; and as he had said before, if the principle was good in the case of corn—if they might not take an insurance against the caprice or hostility of foreign countries in time of war, and against the vicissitudes of seasons by encouraging the home produce, neither must they seek to secure the pre-eminence of the marine of the country by giving an advantage to the labour of British seamen, neither must they give a preference to the productions of their own colonies, or afford protection to their own manufactures."

The corn repealers cannot answer this clear statement of the matter by Sir Robert Peel, but, like Goldsmith's country schoolmaster, "even the confuted yet can argue still;" they repeat over and over again the old story by their itinerant orators. The good sense of the country seems a sufficient defence against them.

I remain, Sir, yours respectfully, S. R.

Near Nottingham, Aug. 20, 1841.

CORN LAWS.

TO THE EDITOR OF THE TIMES.

Sir,—In *The Times* of to day you invite communications on the question of corn duties; and, although my views may differ from those which you entertain on that important subject, I am sure I shall not, merely on that account, be considered intrusive in addressing you, having been one of the earliest, if not the first, to transmit to Mr. Canning a graduated scale of duty for regulating the importation of foreign corn; and, having paid some attention to the working of the scales subsequently adopted, I trust I shall be excused for troubling you with a few remarks on the general operation of the measure.

That evils of extraordinary magnitude arise from the existing scale of duties cannot be denied, but in considering this question it is necessary to distinguish evils originating in the principle of the sliding scale from those which are consequent upon an improper application of it.

If protection to native agriculture be necessary, of which it is presumed few who are capable of taking an impartial view of the measure will entertain a doubt, the principle which levies the highest amount of duty on the importation of foreign corn when the crops of home growth are abundant and cheap, which requires the duty to be diminished as the price of corn increases in the home markets, and ultimately admits foreign corn at a nominal duty when the prices of corn of native growth arrive at such a point as to indicate a deficient supply, must be universally conceded to be founded upon reason and justice; but how this principle is best to be reduced to practice is an important matter for consideration. We may derive some assistance in arriving at a just conclusion on that point by examining the effects produced by the present scale, the annexed being that for regulating the importation of wheat:—

Average price per qr. of British Wheat.	Import Duty per qr.
73s.	1s. 0d.
72s.	2s. 8d.
71s.	6s. 8d.
70s.	10s. 8d.
69s.	13s. 8d.
68s.	16s. 8d.
67s.	18s. 8d.
66s.	20s. 8d.
65s.	21s. 8d.
64s.	22s. 8d.
63s.	23s. 8d.
62s.	24s. 8d.
61s.	25s. 8d.
60s.	26s. 8d.
59s.	27s. 8d.
58s.	28s. 8d.
57s.	29s. 8d.
56s.	30s. 8d.
55s.	31s. 8d.
54s.	32s. 8d.
53s.	33s. 8d.

A mere cursory view thereof will be sufficient to show that it is peculiarly adapted to the encouragement of gambling in the article of food when the prices indicate a scarcity. A few specimens of the working of this scale will prove it to be opposed to the general interest.

When the price of British corn ranges from 53s. to 66s. per qr., for every shilling increase in price the duty is diminished 1s.

From 66s. to 68s. per qr. for every shilling increase in the price the duty is diminished by 2s.

From 68s. to 70s. for every shilling increase in price the duty diminishes 3s. And

From 71s. to 72s. there is a difference of 4s. in the duty. Until the price exceeds 66s. the inducement to work up the averages may not compensate the labour and hazard of the attempt; but to work them up from 66s. to 68s. gives an extra profit of 6s. per qr.—viz.,

Diminished duty	4s.
Increased price	2s.
	6s.

From 68s. to 70s. gives an extra profit of 8s. per qr.

Diminished duty	6s.
Increased price	2s.
	8s.

From 71s. to 72s., only 1s. advance in price gives an additional profit of 5s.

Diminished duty	4s.
Increased price	1s.
	5s.

and if the averages could be forced up from 66s. to 72s. per qr., the additional profit on the introduction of foreign corn would be 20s. per qr., namely—

Diminished duty	14s.
Increased price	6s.
	20s.

Here, then, is the all-powerful motive for an extent of fraud which you most truly designate as humiliating to to think of.

Believing the sliding scale to be the only equitable principle for regulating the importation of foreign corn, I shall submit a scale of duties which I hope will be found to be free from the principal objections of the present one.

The improvements in agriculture which have been made, and are still going on in every part of the kingdom, enable corn to be produced at a cheaper rate than formerly, and justify a reduction in the rate of duty. The improved systems of management have brought into cultivation much of the light lands which were previously considered incapable of advantageously producing the most valuable descriptions of grain, and it is worthy of remark, that in wet seasons these light lands produce wheat of better quality than the stiff soils so highly appreciated. The bringing of the greatest variety of land into cultivation is also the means of affording a more uniform supply, and may be one reason why a recurrence of scarcity is now less frequent than in former times.

I beg to submit the following scale of duties, constructed so as to occasion the smallest variation when the price of corn is highest, and thereby diminishing to the *minimum* extent the motive for inordinate speculation. It is also calculated at the lowest rate to afford the requisite protection under a revised mode of taking the averages.

GRADUATED SCALE OF DUTY.

Average price per qr. of British Wheat.	Import duty per qr.	Average net price per qr. obtained for Foreign Wheat. ex. duty.
72s. and above	1s. 0d.	71s. 0d.
71s.	1s. 6d.	69s. 6d.
70s.	2s. 0d.	68s. 0d.
69s.	3s. 0d.	66s. 0d.
68s.	4s. 0d.	64s. 0d.
67s.	5s. 0d.	62s. 0d.
66s.	6s. 0d.	60s. 0d.
65s.	7s. 0d.	58s. 0d.
64s.	8s. 0d.	56s. 0d.
63s.	9s. 0d.	54s. 0d.
62s.	10s. 0d.	52s. 0d.
61s.	11s. 0d.	50s. 0d.
60s.	12s. 0d.	48s. 0d.
59s.	13s. 0d.	46s. 0d.
58s.	14s. 0d.	44s. 0d.
57s.	15s. 0d.	42s. 0d.
56s.	16s. 0d.	40s. 0d.
55s.	17s. 6d.	37s. 6d.
54s.	19s. 0d.	35s. 0d.
53s.	20s. 6d.	32s. 6d.
52s.	22s. 0d.	30s. 0d.
51s.	23s. 6d.	27s. 6d.
50s. and under	25s. 0d.	25s. 0d.

The above is intended as a protecting duty.

If to be constructed for the additional purpose of increasing the revenue, the diminution of duty must stop at 67s. per qr., and all wheat imported when the averages are at or above that price to be subject to a duty of 5s. per qr.

It were almost superfluous in the present state of society to enforce the necessity for protection to British agriculture, or to contest the visionary desire for a universal equality in the price of bread in the absence of an equality of taxation, an equality of population per square mile, or an equality of wealth or civilization. If due encouragement be given to the improvement of the soil, this country is capable of producing food sufficient for its inhabitants without bringing another acre into cultivation: the productive power of land is susceptible of vast expansion, and the products capable of being multiplied to an extent to which we are wholly incompetent to assign a limit. It is no less certain that improvements in agriculture will keep pace with increasing numbers; the apprehension of famine on account of a redundant population being at variance with the experience of the past and present ages, for in every country the greatest abundance of provisions has been during the period of its greatest population.

These results, however, are not to be attained by the impracticable theory of importing one article of food and producing the others as erroneously supposed in larger quantities. An alternation of corn and green crops is the legitimate purpose to which the bulk of the land in this kingdom must be applied. Mixed husbandry is the only efficient system; it affords constant employment to labourers; plants furnishing the best food are cultivated; and cattle possessing aptitude to fatten are selected, whereby land becomes adapted to the production of abundant crops, one moiety of the soil bearing grain, while from the other is obtained animal food, and in greater quantity from each than could be derived if the whole of the land were directed to one species of occupation.

The British manufacturers are enabled by the aid of powerful machinery to produce an immense quantity of goods, for which there is no adequate demand. The natural activity of this class of society prompting them to pursue with vigour whatever they may consider to be to their advantage, regardless of the consequences to others, are endeavouring to force a trade by proposing to accept corn in payment instead of money, and assign, though wrongfully, their inability to contest in the foreign market to the high price of grain in England.

It is obvious, since manual labour has been so extensively superseded by machinery, that the value of corn can very little affect the price of goods. When as much can now be produced by machinery as would be equal to the labour of 50,000,000 of artisans, the clamour against the landed interest must be totally void of foundation; and not only so, for while this powerful machinery continues in activity, were corn to be introduced at prices to cause a reduction of fifty per cent. in rents, the difference it would make to the consumers in the prices of goods so produced would be imperceptible.

I shall only trouble you with one more remark on the senseless cry against what is called the landlords' monopoly, in order to compare the present system with that which would follow the adoption of the policy contended for. If all the bread corn hereafter to be consumed in this country were to be of foreign growth, it would not only establish the most dangerous monopoly that ever existed, but the most hideous that could possibly be conceived. It would soon arrive at a perfectly organized system under the direction of a limited number of great capitalists, possessing at all times within themselves the power of supplying the main article of human sustenance upon their own terms.

Why employ the peasantry of foreign lands to furnish bread to Britain, to feed not only the merchants and manufacturers but also the husbandmen. Who is to pay for it? And how, if paid for, will the money be applied but to improve continental husbandry to the destruction of British agriculture, and to establish manufactures eventually to exclude our own?

I am, Sir, your obedient servant,
LAYTON COOKE.

7, *John-street, Adelphi, London, August* 19.

REAPING.

MOWING BY THE SCYTHE.

This instrument is frequently made use of for cutting oats and barley; and in some districts of Kent and Norfolk, it is even used for wheat; but it does not appear to answer when the land is foul. The scythe is either plain, or furnished with a bow or cradle, to assist in laying the heads more regularly in one direction.

The late celebrated George Culley maintained that this was the most complete mode of cutting down barley; that when properly mown it could be neatly tied up in sheaves, and could be thrashed by a machine, though not so completely as if in sheaves. Whenever the crop, however, is much lodged, or irregularly broken down, or interwoven by squalls of wind or heavy rains, the scythe cannot act with efficacy or even with safety. The use of the scythe, therefore, is only admissible when the corn stands upright, or with a regular inclination, or nearly so, in one direction. But the use of the scythe is objected to on the following grounds:—1. When clover, or any other grass, has been sown with the crop of corn, the scythe will cut nearly all the grass that has grown, which, mingled with the stems of the corn in so large a proportion, must render the harvesting extremely hazardous. 2. It has a more slovenly appearance in the field. 3. It is more difficult, with a load of grass, to put the crop in shocks, or stocks, and the operation is more wasteful. 4. The crop cannot be so easily or so safely stacked. 5. It requires more time in carrying, and greater space for housing than reaped corn; and, 6. It cannot be well thrashed by the flail, and it requires a good machine to thrash mown wheat clean.

A comparison has been made between the expense of reaping by the sickle and cutting down by the scythe. By the sickle it would cost about 12s. per English acre for barley, and 15s. for wheat. By the scythe it could be cut at least 2s. cheaper, and with from two to four additional inches of straw, the manure from which will be worth from 4s. to 7s. It may be added however, that it is practicable to obtain nearly as much straw by the sickle as by the scythe, provided the farmer is disposed to bestow the necessary time and attention upon the conduct of his reapers, and will give them a moderate addition to their wages when the work is properly executed.

BAGGING.

This is a practice principally confined to the counties of Middlesex and Surrey, where it has been adopted with a view of securing an increased quantity of straw. This it does to the amount of from 4s. to 7s. per acre. In Devonshire the crops are chopped down in a similar manner, so as to leave hardly any stubble. It is done by a toothless reaping-hook, of about twice the weight of a common sickle, which is sharpened as often as necessary. The operation is performed by cutting the crop down by a succession of blows, made within two or three inches of the ground. It is, in fact, mowing with one hand against the standing corn. By bagging, the straw is cut much closer to the ground than is generally done by hand-reaping. There is little or no difference of expense between bagging and common sickle reaping, whilst it is equally expeditious. Beans are usually *bagged* as well as wheat. The expense of bagging is generally about 15s. per acre; but it varies from 12s. to 20s., according to the bulk and condition of the crop.

It would appear that the mode of reaping, as executed by Welsh labourers, in the counties of Hereford and Salop, is the most perfect and the cheapest of any hitherto known. It is performed by an instrument a little longer than the common sickle, and about double the breadth, without teeth, but sharpened like a scythe. The sickle is known by the name of the *Cardigan hook*, which may be purchased at Ludlow and all other towns in that neighbourhood for 2s. 8d. each. With the hook a whetstone is bought for 3d. This mode of reaping is equally applicable to wheat, barley, oats, beans, and peas. The reaper bears up what he cuts against the standing corn, with one arm and leg, pushing it before him, until he gets about half a sheaf. It is cut down close to the ground. In the harvest of 1818, the common price given was 4s. 6d. per statute acre, the employer finding food, drink and lodging; but when these are not furnished, the usual price is from 7s. to 8s. per acre for wheat, and for that sum the reaper not only cuts but binds up the grain. The general adoption of so useful a system cannot be too much recommended.

The Flemish mode of cutting grain by a stick with an iron hook and a short scythe has been already described. It is only a small deviation from bagging, and is said to be a most expeditious mode of cutting grain.—*Sinclair's Code of Agriculture.*

ENGLISH AND SCOTCH MODES OF HARVESTING GRAIN.—Mowing grain has long been practised in Dumfries-shire; the plan of execution is materially different from that followed in Monmouthshire and other counties of England and Wales. The sythe is mounted with something similar to the cradle used in this country, with these exceptions—the gatherer, if I may be allowed to call it such, is made of iron, from a small nail rod, as light as possible to stand the work, the two or three prongs or pikes extending nearly half way from heel to point along the blade, the lower one standing about eight inches from the sythe, and the next ten inches above, and the third, which is seldom used except in very tall corn, may be apportioned according to the others. With this instrument full rigged a good scytheman will cut two acres a day, and do his work well; the cut grain, instead of being thrown off hay fashion, is uniformly laid to the standing crop, and left leaning against it; a woman or a stout boy follows close up, making the sheaves, and putting a band under each, leaving it ready for the binder, who binds the sheaves and sets them up in shocks; these operations require to be performed by active hands, to prevent detention and confusion, where ten or a dozen mowers are following one another, which frequently is the case on large farms, and that too without a single interruption; every one is at his or her post, and the operations are carried on like clock-work. It may not be ill-timed here to calculate the expense of cutting, sheafing, binding, shocking, and raking the ground over two acres, as performed by one set, and that may be taken as a key to the whole. The average wages in the county alluded to will be found as near as may be to have been for years, say—a good mower, 2s. 6d.; binder, 2s.; lifter, 1s. 6d.; boy to rake, 1s.; thus two acres cost 7s. The shocks in Nithsdale are made in the following order; a man picks up two sheaves and sets them on the ground firm, tops up, leaning a little to catch each other; he then goes on in like manner till ten are standing, when he puts on a hood sheaf at each end, the roots meeting over, the centre standing sheaves and the tops slanting towards the ground. A shock thus put up will resist rain for a week, and also stand firm, except in a hurricane, in which case the fallen sheaves should be left standing along with the others, till dry, and then put on. Corn harvested in this way will require about a week of fine weather to render it fit to be taken to the barn or yard; if it is very clean of grass, clover, or weeds, less time may do. Wheat with a good ripe upon it may be carried the same day that it is cut, when very clean, and made into ricks of small size, say to contain an hundred bushels. When hand-reaping becomes a subject to be considered, which is decidedly the most tradesmanlike way of executing harvest work, the expense will stand something about 8s. 6d. or 9s. per acre. In 1827, the late Lieut. General Sir J. H. Maxwell, of Spring Bell, let the cutting of his crops at 6s. an acre. In this way three reapers and a half are expected to cut an acre, and one man to bind it. When crops are lodged, either from the inclemency of the weather or their own weight, the farmer would be looking to his own profit to have it hand-reaped. I have also seen a system locally called bagging adopted in many parts of England, Wales, Ireland, and France. This plan would not be allowed north of the Tweed, although the farmers could have it done gratis. After weighing the matter in impartial scales, my humble opinion is that hand-reaping is by far the most profitable method of harvesting wheat. Barley and oats may be mowed with propriety, when cut, sheaved, and shocked immediately; for when left lying like hay, the effects of which I saw amply versified in Carmarthenshire in 1839, if the weather prove unpropitious, it is beaten, bleached, and almost thrashed on the field. When stating the expense of reaping, &c., I omitted to mention that there is no allowance for drink: such a thing is wholly unlooked for in those parts; and in fact of every part of broad Scotland, unless adopted very recently.—*Correspondent of the Monmouth Beacon.*

EAST SUFFOLK AGRICULTURAL ASSOCIATION.

List of Prizes awarded for Cattle at the above meeting, held at Saxmundham, on Thursday, September 9.

CLASS VIII.—CATTLE.

1. To the owner of the best stallion, for the general purposes of agriculture, Mr. Thomas Crisp, of Gedgrave, 15*l*. Silver medal, as breeder, Mr. Francis Keer.

2. To the owner of the second best ditto, Mr. T. N. Catlin, of Chillesford, 5*l*.

3. To the owner of the best brood mare, for the general purposes of agriculture, with a foal at foot, R. N. Shawe, Esq., Kesgrave, 8*l*. Silver medal, as breeder, R. N. Shawe, Esq.

4. To the owner of the second best ditto, Mr. Moses Crisp, of Letheringham, 4*l*.

5. To the owner of the best mare, for the general purposes of agriculture, Mr. Jonathan Keer, of Wantisden Hall, 5*l*. Silver medal, as breeder, Mr. Jonathan Keer.

6. To the owner of the second best ditto, Mr. Henry Flatt, of Blaxhall, 3*l*.

7. To the owner of the best entire three-year-old colt, for the general purposes of agriculture, Mr. H. Keer, of Parham, 5*l*. Silver medal, as breeder, Mr. Henry Keer.

8. To the owner of the best three-year-old filly, for the general purposes of agriculture, Mr. Catlin, Butley Abbey, 5*l*. Silver medal, as breeder, Mr. Catlin.

9. To the owner of the second best ditto, Mr. Moses Crisp, of Letheringham, 3*l*.

10. To the owner of the best two-year old filly, for the general purposes of agriculture, Mr. T. N. Catlin, Chillersford Lodge, 3*l*. Silver medal, as breeder, Mr. T. N. Catlin.

11. To the owner of the best gelding, for the general purposes of agriculture, Capt. O'Grady, of Orford, 3*l*. Silver medal, as breeder, Mr. Thos. Crisp.

12. To the owner of the second best ditto, Mr. Moses Crisp, of Letheringham, 2*l*.

13. To the owner of the best Suffolk bull, Mr. Thomas Crisp, of Gedgrave, 5*l*. Silver medal, as breeder, Mr. Thos. Crisp.

14. To the owner of the second best ditto, Mr. Thos. Crisp, 3*l*.

15. To the owner of the best bull of any other breed, Mr. Thos. Crisp, 8*l*. Silver medal, as breeder, Mr. Thomas Crisp.

16. To the owner of the best Suffolk cow, in milk or in calf, Mr. James Reed, of Laxfield. Silver medal, as breeder, Mr. Gooch, of Brundish.

17. To the owner of the best three-year old Suffolk heifer, in milk or in calf, Mr. Thomas Crisp, 3*l*. Silver medal, as breeder, Mr. Thos. Crisp.

18. To the owner of the best cow in milk or in calf, of any other breed, the Right Hon. Lord Huntingfield, 5*l*. Silver medal, as breeder, Dr. Teesdale, of Malton, Yorkshire.

19. To the owner of the best two-year old heifer, of any other breed, Mr. Thos. Crisp, 3*l*. Silver medal, as breeder, Mr. Thos. Crisp.

20. To the owner of the best tup, of the pure Southdown breed, Mr. Thos. Crisp, 5*l*. Silver medal, as breeder, Mr. Thos. Crisp.

21. To the owner of the best shearling ditto, Mr. Thos. Crisp, 5*l*. Silver medal, as breeder, Mr. Thos. Crisp.

22. To the owner of the second best shearling ditto, Mr. Thomas Crisp, 2*l*.

23. To the owner of the best tup, of any other pure breed, Mr. R. B. Harvey, of Harleston, 5*l*. Silver medal, as breeder, — Powlett, Esq., of Tinwell, Rutlandshire.

24. To the owner of the best shearling tup, of any other pure breed, Mr. H. Largent, Marlesford, 5*l*. Silver medal, as breeder, Mr. H. Largent.

25. To the owner of the best pen of five shearling ewes, of the pure Southdown breed, Mr. Thos. Crisp, 5*l*. Silver medal, as breeder, Mr. Thos. Crisp.

26. To the owner of the best pen of five shearling ewes, of any other pure breed, Mr. Henry Largent, 5*l*. Silver medal, as breeder, Mr. Henry Largent.

27. To the owner of the best boar, Mr. Edwards, of Sutton, 3*l*. Silver medal, as breeder, Mr. Edwards.

28. To the owner of the best breeding sow, Mr. Moses Crisp, 3*l*. Silver medal, as breeder, Mr. Moses Crisp.

29. To the owner of the best fat ox, Mr. Thos. Crisp, 5*l*. Silver medal, as breeder, Mr. Thos. Crisp.

30. To the owner of the second best ditto, Mr. Thos. Crisp, 3*l*.

31. To the owner of the best fat ox, bred in Suffolk, Mr. T. Crisp, 5*l*. Silver medal, as breeder, Mr. Thos. Crisp.

32. To the owner of the second best ditto, Mr. Thos. Crisp, 3*l*.

33. To the owner of the best pen of three fat Southdown shearling wethers, Mr. Henry Cross, of Kirton, 3*l*. Silver medal, as breeder, Mr. Everett, of Brightwell.

34. To the owner of the best pen of three fat shearling wethers of any other breed, premium withheld, not sufficient merit, 3*l*.

35. To the owner of the best fat hog, Mr. T. N. Catlin, 2*l*. Silver medal, as breeder, Mr. T. N. Catlin.

CLASS IX.—HORSES FOR RIDING PURPOSES.

1. To the owner of the best mare, not thorough-bred, with foal at foot, for riding purposes, get by a thorough-bred horse, or out of a thorough-bred mare, premium withheld, not sufficient merit, 5*l*.

2. To the owner of the best three-year-old colt or filly, not thorough-bred, for riding purposes, got by a thorough-bred horse, or out of a thorough-bred mare, the Rev. J. H. Stimson, of Shottisham, 5*l*.

PRIZE OFFERED BY R. N. SHAWE, ESQ.

The premium of *ten sovereigns* offered by R. N. Shawe, Esq., to the owner of the best thorough-bred stallion, who should have covered not less than thirty mares (exclusive of the mares of his owner,) during the last season, within the eastern division of the county of Suffolk, was awarded to Edmund Jenny, Esq., of Hasketon.

SILVER CUP OFFERED BY LORD HENNIKER.

The Silver Cup offered by the Right Hon. Lord Henniker, M.P., to the Member of this Association who should produce the three best Suffolk cows, selected from his own dairy of not less than six, was awarded to Mr. James Reed, of Laxfield.

SWEEPSTAKES—*One sovereign each.*

Best cart stallion, Mr. Thos. Crisp, beating Mr. W. Wilson, Mr. R. Easter, and Mr. Isaac Rist.

Best two-year-old cart stallion, Mr. Samuel Durham, beating Mr. Crisps Plant.

Best cart mare, Mr. Jonathan Keer, beating Mr. Henry Platt.

Best shearling Southdown tup, Mr. Thos. Crisp, beating Mr. Nathan Crisp.

Best pen of five lambs of any breed, Mr. Samuel Robinson, beating Mr. R. B. Harvey.

Best three-year-old entire cart colt, Mr. Henry Kerr, beating Mr. Francis Keer, and Mr. Samuel Toller.

Best cart gelding, Mr. Francis Keer, beating Mr. Jonathan Keer.

DRILL-DIBBLING MACHINE FOR TURNIPS.

BY MR. JAMES SIDEY, SMITH AND FARRIER, PITCAIRN GREEN, NEAR PERTH.

In the number of this Journal for September 1840, there is an article by Mr. Cuthbert W. Johnson, "On rendering manure more portable and applicable by the drill." In that article Mr. Johnson mentions, with approbation, a dibbling machine invented by Mr. Grounsel of Louth, for which the English Agricultural Society awarded him, in 1839, their silver medal, and respecting which the inventor says—"My drill will deposit from 6 to 100 bushels per acre of any kind of compost that may be prepared for drilling from ten inches to any greater distance apart in the rows." To this the editor demurs, and states his objection in a note which is appended to the article, and of which the following is a copy:—

"We saw this drill at the Oxford Show, and it then could not deposit *small* quantities of ashes at short distances with precision,—the quantity, when deposited with anything like precision, being considerable, and the distance betwixt the heaps 16 inches, much too great a distance for turnips. The apparatus necessary for depositing the manure in heaps rendered the whole machine very complicated, and of course expensive. This mode of depositing manure has been tried in Scotland and abandoned, not only on account of the uncertainty of the machine depositing the manure at the requisite distance of 9 inches for white and yellow turnips, and 12 inches for Swedes; but also, in case all the plants happened to be taken away above a heap of manure in the thinning process, a large blank would be left in the crop; and the seed having been sown without interruption, the plants in the intermediate distances between the heaps would not be worth keeping. There seems no good reason for depositing the manure in small heaps for turnips; and the uncertainty of its deposition at the requisite distances, with the complication of the machinery, seem to counterbalance any advantage to be derived from the plan, on the score of expense."

It is not my intention, nor am I entitled, to make any remarks upon Mr. Grounsel's machine, for I never saw it, and can form no conception of it. If your description of it be fair, it cannot, I think, be doubted that your condemnation of it is just; and the only wonder is, how it should ever have received either Mr. Johnson's approbation or the English Agricultural Society's reward. But when, after having pointed out the defects of Mr. Grounsel's machine, you go on to state in your note, that "this mode of depositing manure had been tried in Scotland and abandoned," &c., I must take the liberty to say, that your knowledge upon this point is not accurate, and therefore your statement respecting *it* is not in accordance with *fact*. I have no doubt that the dibbling-machines which you have seen tried, in a certain locality of Scotland, have been all of them ultimately abandoned, on account of the defects which you mention; but this is surely no proof that all the dibbling-machines which have been tried in Scotland possess these defects, or have been abandoned. On the contrary, I beg to inform you, that you will find plenty of dibbling-machines in Perthshire possessing none of the defects you mention. I have, during the last five years, made upwards of seventy such machines, which have not only been tried, but are in constant use by most of the intelligent proprietors and farmers in the neighbourhood, and the demand for them is yearly increasing. My machine is made entirely of iron, and therefore is very durable; and it is exceedingly simple in its construction, and therefore very cheap. It has been chiefly employed in dibbling bone and rape dust, but it is fitted to dibble any kind of manure, if properly prepared. It can deposit from five to twenty-five bushels per acre, at a distance of from nine to twelve inches apart; and it does the small quantities and short distances just as accurately as the large quantities and long distances. It inserts the manure at from one to six inches into the ground, deposits the seed immediately and only above the manure, and covers the whole by bringing a light roller over it. In this way, it manures, sows, and rolls a drill at once, so that one man and one horse, working the ordinary hours, can, without difficulty, finish five acres per day. It could easily be made to sow two drills at a time, and thus to finish double the number of acres per day. Indeed, it was in this double form that it was first tried; but the machine in this form was very heavy, and it was found to be very difficult, unless the drills were drawn with the greatest accuracy at equal distances, to deposit the manure and the seed exactly on the top of both drills. Hence the single machine is almost universally preferred to the double one. Nearly 1000 acres of turnips are sown every year in the neighbourhood with this machine, and I have never yet heard of one who gave it a fair trial laying it aside. Ten bushels of bones and three pounds of seed per acre are the common quantities used by those who employ this machine. With these they raise as fine a braird and as heavy a crop as they were wont to do when they used nearly double the quantity both of bones and seed. In fact, any man who has ten acres of turnips to sow will easily save, on seed and manure, more by it in one year than the price of the machine. You seem to think that there is no "good reason for depositing the manure in small heaps for turnips;" but I am certain that there is no one who understands or uses the dibbling-machine which I have just described, that is not able easily to give you twenty most satisfactory reasons for such a practice. If you have any doubt of the accuracy of the above statements, or think them at all worthy of your notice, I beg to refer you to Messrs. Drummond and Sons, Stirling, for whom I have made nine dibbling-machines, most of which, I understand, have been sent to England; and also to the Honourable Lord Lynedoch, the Messrs. Richmond, Ritchie, and Graham, and Mr. John Tod, Aberdalgie, by whose judicious suggestion I was led to make a very important improvement on the machine. These gentlemen, and many others in the neighbourhood, sow all their turnips with this machine; and I venture to affirm that, either in extent or quality, their turnip crop is not often surpassed by any in the kingdom.*—*Quarterly Journal of Agriculture.*

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* We may here be allowed to remark, that our information regarding the abandonment of the double dibbling-machine is corroborated by Mr. Sidey himself, for it seems they have been abandoned. We never before heard of the single machine now described by Mr. Sidey, and therefore our remarks could not have applied to *it*. We could *then* see no good reason for depositing the manure in heaps, instead of continuously; but *now*, when we learn from Mr. Sidey that, by so doing, as good a crop of turnips can be raised with ten bushels as with sixteen bushels on the imperial, or twenty bushels on the Scotch acre, that reason alone is a satisfactory one enough to us for using Mr. Sidey's single machine. We hope he will send a model of it, on a scale of three inches to the foot, to the new Museum of the Highland and Agricultural Society.—ED.

CAUTION TO FARMERS AGAINST COW-POISON.

In November last Mr. T. Sellen, of Little Chart, in this county, sent us some roots, with the following note:—

"Sir,—In cleaning out the ditches upon my farm last week, amongst the roots thrown out was a good deal of that which is by some called bendock, but which I think is henbane, a piece of which I enclose for your inspection.

"Four of my milch cows got by accident into a field, all of which, as it appears, ate a portion of the poisonous root. They were immediately taken very ill, staggered, and fell down. Their whole frame became subject to the most dreadful convulsions, and in less than half an hour two of them were released by death from their sufferings, which seemed to be of the most excruciating nature. The other two, I am happy to say, have recovered. "Yours, &c.,

"*Little Chart, Nov.* 28*th*, 1840. T. Sellen."

We then submitted the root to several of the best botanists of the district, who were mostly of opinion that it was the *œnanthe crocata*, or hemlock water-drop, Sowerby's description of which we then gave. The difficulty of identifying plants by the roots alone, as they are generally classed by other parts, induced us to request that Mr. Sellen would serve the farmers of the same district, and the public generally, by sending us, in July, one of the plants in blossom; ourselves promising to get it so accurately described as to warn others against the dangers arising from it. Mr. Sellen has sent us a specimen of the plant, and Mr. Bruce, of the West Kent Infirmary, and the other medical botanists of the district, are confirmed in the opinion they last year formed of the plant being the *œnanthe crocata*. Another poisonous plant to which it bears some resemblance is the *cicuta virosa* (long-leaved water hemlock or cow-bane), but the latter generally has its stem about twice as thick as the plant in question, and the branches spreading out much more from the stem. The height of the *cicuta* seldom exceeds four feet, whilst the *œnanthe* is generally five feet.

Farmers cannot be too frequently cautioned against this dangerous root, and we therefore republish Sowerby's description of it.

"It grows in watery situations, about the banks of great rivers, as the Thames and others, flowering in July. The root is perennial, composed of numerous ovate fleshy knobs, whose juice is peculiarly virulent. The stems are from two to five feet high, &c., &c. The whole herb contains a fetid yellow juice, and is very poisonous. Ehret found a giddiness affect him while drawing it. Sir Thomas Fawkland has known brood mares sometimes eat of the root, and die in consequence."

The following description of this most deadly poisonous plant and its fatal effects is taken from Hooper's Medical Dictionary.

"*Œnanthe crocata.*—The hemlock drop-wort. *Œnanthe—chærophylli foliis*, of Linnæus. An active poison, that has too often proved fatal, by being eaten in mistake instead of water parsnip. The juice, nevertheless, cautiously exhibited, promises to be an efficacious remedy in inveterate scorbutic eruptions. The root of this plant is not unpleasant to the taste. It is esteemed to be the most deleterious of all the vegetables which this country produces. Mr. Howel, surgeon at Haverfordwest, relates, that "eleven French prisoners had the liberty of walking in and about the town of Pembroke. Three of them being in the fields a little before noon, dug up a large quantity of this plant, which they took to be wild celery, to eat with their bread and butter for dinner. After washing it, they all three ate, or rather tasted of the roots.' As they were entering the town, without any previous notice of sickness at the stomach, or disorder of the head, one of them was seized with convulsions. The other two ran home, and sent a surgeon to him. The surgeon endeavoured first to bleed, and then to vomit him; but those endeavours were fruitless, and he died presently. Ignorant of the cause of their comrade's death, and of their own danger, they gave of these roots to the other eight prisoners, who ate of them with their dinner. A few minutes afterwards the remaining two who gathered the plants were seized in the same manner as the first, of whom one died; the other was bled, and a vomit, with great difficulty, forced down, on account of his jaws being, as it were, locked together. This operated, and he recovered, but was for some time affected with dizziness in his head, though not sick, or the least disordered in the stomach. The other eight, being bled and vomited immediately, were soon well." At Clonmell, in Ireland, eight boys mistaking this root for water-parsnip, ate plentifully of its roots. About four or five hours after, the eldest boy became suddenly convulsed, and died; and before the next morning, four of the other boys died in a similar manner. Of the other three, one was manaical for several hours, another lost his hair and nails, but the third escaped unhurt. Stalpaart Vander Wiel mentions two cases of the fatal effects of this root; these, however, were attended with great heat in the throat and stomach, sickness, vertigo, and purging; they both died in the course of two or three hours after eating the root. Allen, in his Synopsis Medicinæ, also relates that four children suffered greatly from eating this poison. In these cases great agony was experienced before the convulsions supervened; vomitings likewise came on, which were encouraged by large draughts of oil and warm water, to which their recovery is ascribed. The late Sir William Watson, who refers to the instances here cited, also says, that a Dutchman was poisoned by the leaves of the plant boiled in pottage. It appears, from various authorities, that most brute animals are not less affected by this poison than man; and Lightfoot informs us, that a spoonful of the juice of this plant given to a dog rendered him sick and stupid; but a goat was observed to eat the plant with impunity. The great virulence of this plant has not, however, prevented it from being taken medicinally. In a letter from Dr. Pulteney to Sir William Watson, we are told that a severe and cutaneous disorder was cured by the juice of the root, though not without exciting the most alarming symptoms. Taken in the dose of a spoonful, in two hours afterwards the head was affected in a very extraordinary manner, followed with violent sickness and vomiting, cold sweats, and rigours; but this did not deter the patient from continuing the medicine, in somewhat less doses, till it effected a cure.

On Thursday, Aug. 26, the annual sale of Mr. W. Fisher Hobbs, of Mark Hall, Coggeshall, Essex, took place. It was expected that as it was the first fine day during the week, the state of the harvest, much grain being cut and ready to carry, would have materially reduced the numbers likely to attend; such, however, was not the case. A large company assembled at the appointed hour, amongst whom were, Osgood Hanbury, Esq., the Hon. W. G. Cavendish, C. Saville Onley, Esq., Major Hamilton, Captain Blake, the Rev. P. J. Honeywood, W. Honeywood, Esq., H. Hanbury, Esq., Captain Tyson, — Pattison, Esq., G. Vaisey, Esq., — Bateman, Esq., the Rev. W. L. Rham, and W. Shaw, Esq., &c., &c., the two last-named gentlemen being members of the Council of the Royal Agricultural Society of England. There were also many gentlemen from remote parts of the county of Essex, from Suffolk and other places. At half-past one o'clock the company sat down to an elegant cold collation, in a marquee prepared for the occasion. The chair was occupied by Osgood Hanbury, Esq. Time would not admit of any series of toasts, but the health of the chairman and of Mr. Hobbs were drank, and the due meed of praise bestowed upon the kindness and amenity of manner displayed by the former, and the known merits and perseverance in agricultural improvement exhibited by the latter. This agreeable part of the proceedings having terminated the sale commenced under the skilful management of Mr. Surridge; and here we cannot refrain from recording a statement made by Mr. Surridge, for the truth of which we can vouch, that Mr. Hobbs has never in any one instance sanctioned the reprehensible system of puffing by buying in animals after they had been run up to high prices, and thus obtaining a fictitious reputation for selling his stock at extraordinary rates. The sale went off with great spirit, and the Leicester tups, which were superior to former years, sold as high as 15*l.* 15s. each. Some of those which were let realised twelve guineas and a half for the season. Half-bred Down lambs fetched as high as 29s. each, and stock Down ewes 31s. each. The whole were disposed of in a comparatively very short space of time. Those persons who arrived some time before the sale began, walked over Mr. Hobb's farm, and expressed very much gratification in inspecting his Hereford cattle and his breed of pigs, which have attained a well merited celebrity. It has been usual for the East Essex foxhounds to commence the season on Mr. Hobbs' farm on the day of his annual sale, but in consequence of the lateness of the harvest, there being no ground cleared, they were unable to do so this year. They were, however, upon the ground during the greater part of the day, and added much to the liveliness of the scene.

BOURN AGRICULTURAL SOCIETY.

The sixth annual meeting for the exhibition of stock, &c., took place on Wednesday, September 8, in the customary place, the Castle-hill, at Bourn. Great interest was evinced in the exhibition of stock, which was excellent—the classes were well filled, with the exception of the first class, for fat oxen, and some of the animals shown were justly admired for symmetry and utility. It is almost invidious to particularize where there is general merit; but we do but echo the public opinion, when we venture to eulogise, as most deserving of praise, Lord Exeter's ox, which took the prize in Class 1, (and a more symmetrical and beautiful animal than which we never saw exhibited); the whole of the beast exhibited by Mr. R. Smith, of Burley, were excellent; and the rams of Mr. Casswell, of Pointen, (who took the two prizes, in Classes 13 and 14), excited universal admiration. Mr. W. Dawson, of Birthorpe, also showed some superior animals of this description. The classes for pigs presented a very interesting exhibition, particularly an extraordinarily fine litter of 13, shown by Mr. Shotbolt, and the animals exhibited by Mr. Westmoreland and Mr. Goodacre.

There was, both on the ground and in the Market-place, an interesting display of agricultural implements, shown by Mr. Osborne (Bourn), Mr. Grant (Stamford), and Mr. Coultas (Grantham). The improved patent horse rake of Mr. Grant was vastly admired, both for utility and simplicity, and we heard more than one experienced agriculturist express an opinion that it must before long come into general use. Among the company in the show-yard were, Sir John Trollope, Bart., M.P.; General Johnson, M.P.; the Revs. P. W. Pegus, Dodsworth, C. P. Worsley, &c., &c. We cannot refrain from bearing our testimony to the zeal and attention paid to the management of this society by the officers; we would only suggest, that the adjudications should take place on the afternoon before the show, an alteration which would considerably lighten the labours of these gentlemen, and add to the perfectness of the general arrangements.

PRIZES AWARDED.

Class 1. Oxen under 5 years of age, without restrictions as to feeding.—First premium, 7 sovs., awarded to the most Hon. the Marquis of Exeter, for a 4 years and 5 months old roan steer.

Second ditto, 3 sovs., not awarded.

Class 2. Oxen under 4 years of age, that have been kept on vegetable food only.—First premium, 4 sovs., to R. W. Baker, Esq., of Cottesmore, for his under 3 years old ox.

Second ditto, 2 sovs., to Mr. Henry Hodgkin, of Edenham, for his 3 years old steer.

Class 3. Fat Cows of any age, without restrictions as to feeding.—First premium, 3 sovs., to the most Hon. the Marquis of Exeter, for his 5 years and 8 months old red cow.

Second ditto, 1 sov., to R. W. Baker, Esq., of Cottesmore, for his 12 years old cow.

Class 4. Fat Cows of any age, that have been kept on vegetable food only.—First premium, 3 sovs., to Mr. Robt. Smith, of Burley on the Hill, for his 5 years and 1 month old cow.

Second ditto, 1 sov., to the Rev. Bazil Beridge, of Algarkirk, for his 6 years old roan cow.

Class 5. Bulls of any age.—Premium of 5 sovs., to Mr. John Bettinson, of Thurlby.

Class 6. Bulls under 18 months old.—Premium, 3 sovs., to Mr. Seth Smith, of West Deeping.

Class 7. Milch Cows of any age or breed, now in use, that have calved within six months of the meeting.—First premium, 3 sovs., to the most Hon. the Marquis of Exeter, for his 9 years and 6 months old cow.

Second ditto, 1 sov., to the representatives of Mr. John Longstaff, of Dunsby, for his 4 years old red roan milch cow.

Class 8. Cottagers' Cows, having had a Calf within nine months.—First premium, 2 sovs., to Wm. Faulkner, of Eagleton, for his 2 years and 10 months old cow.

Second ditto, 1 sov., to Samuel Trott, of Edenham, for his 6 years old red turnil cow.

Class 9. In-calf Heifers, (having gone half their time,) not exceeding 3 years old, and kept on vegetable food only.—First premium, 3 sovs., to Mr. Robert Smith, of Burley, for his 2 years and 9 months old heifer.

Second ditto, 1 sov., to the Rev. Bazil Beridge, of Algarkirk, for his 2 years and 4 months old roan heifer.

Class 10. Heifers not exceeding 2 years old, bred by the exhibitor, subject to the restricting mode of feeding as in class 4.—First premium, 3 sovs., to Mr. Robert Smith, of Burley, for his pair of heifers under 21 months old.

Second ditto, 1 sov., to Mr. Henry Hodgkin, of Edenham, for his pair of heifers under 1 and a half year old.

Class 11. Steers under 3 years old, bred by the exhibitor, subject to the restrictive mode of feeding as in class 4.—First premium, 3 sovs.; second ditto, 1 sov.; no entries.

Class 12. Steers under 2 years old, subject to the restricting mode of feeding as in class 4.—First premium, 2 sovs., to Mr. Robert Smith, of Burley, for his pair of steers.

Second ditto, 1 sov., to Mr. W. Dawson, of Birthorpe, for his 2 red steers.

Class 13. Rams of any age, without restrictions as to feeding.—Premium, 5 sovs., to Mr. Thomas Casswell, of Pointon, for his 2-shear ram.

Class 14. Shearling Rams, without restrictions as to feeding.—Premium, 5 sovs., to Mr. Thomas Casswell, of Pointon, for his shearling ram.

Class 15. Theaves (in pens of 3), bred by the exhibitor, which shall not have had other than green food after the 1st of May preceding the Show.—Premium, 3 sovs., to Mr. Seth Smith, of West Deeping, for his 3 theaves.

Class 16. Ewes (in pens of 3), bred by the exhibitor, having sucked Lambs to the 15th July, and fed on vegetable food only.—Premium, 3 sovs., to Mr. John Carr, of Tallington, for his 3 ewes.

Class 17. Two-shear Wethers (in pens of 3), fed on vegetable food only.—Premium, 3 sovs., not awarded.

Class 18. Shearling Wethers, bred by the exhibitor, and kept on green food only.—Premium, 3 sovs., to Mr. Seth Smith, of West Deeping, for his 3 shearling wethers.

Class 19. Shearling Wethers (in pens of 3), without restrictions as to feeding.—Premium, 3 sovs., to the Rev. W. Pegus, of Uffington, for his 3 shearling wethers

Class 20. Sheder Lambs (in pens of 6), having been kept on green food only.—Premium, 3 sovs., to Mr. Joseph Shotbolt, of Bourn Fen, for his 6 sheder lambs.

Class 21. Cart Horses of any age.—Premium, 5 sovs., to Mr. William Mann, of Spalding, for his brown cart horse.

Class 22. Coach Horses, of any age.—Premium, 5 sovs., to Mr. William Cowling, of Silsden, Yorkshire, for his 5 years old bay colt.

Cart Foals.—Premium, 2 sovs., not awarded.

Class 23. Boars of any age, serving Sows, at 5s. each, for the ensuing 6 months.—Premium, 2 sovs., to the Rev. Basil Beridge, of Algarkirk, for his 1 year and 5 months old boar.

Class 24. In-pigged or Suckling Sows, of any age.—Premium, 2 sovs., to Mr. Joseph Shotbolt, of Bourn Fen, for his 3 years old sow.

Class 25. Feeding Pigs, under 18 months old.—Premium, 1 sov., to Mr. James Goodacre, of Billingboro', for his 11 months old fat pig.

Class 26. Cottagers' Pigs, under 12 months old.—Premium, 1 sov., to Mr. Richard Edwards, of Stenfield, for his 1 year old pig.

Class 27. The best leash of Fowls, 1 male and 2 females.—Premium, 2 sovs., given by H. Handley, Esq., to Mr. James Goodacre, of Billingboro'.

EXTRA STOCK.—HORSES.

A premium of 1 sov., to Mr. J. T. Sharpe, for his bay yearling colt.

CATTLE.

A premium of 1 sov., to Mr. C. Sharman, of Swinstead, for his 11 years old red roan cow.

A premium of 1 sov., to the most Hon. the Marquis of Exeter, for his red cow.

SHEEP.

A premium of 1 sov., to Mr. E. E. Dawson, of Ingthorpe, for his shearling ram.

PIGS.

A premium of 1 sov., to the Rev. W. Pegus, of Uffington, for his 13 months old boar.

PLOUGHING.

Class 8. Premium (a Silver Cup) awarded to Mr. Richard Simpson.

Class 9. A premium (5*l.*), awarded to James Goodyer, servant with Mr. J. L. Arden, of Dyke. The class generally commended.—The medal to the master of the ploughman, awarded to Mr. J. L. Arden, of Dyke.

Class 10. First premium (2*l.*), awarded to Ward Harris, servant to Mr. J. T. Sharpe, of Thurlby Grange.

Second ditto (1*l.*), awarded to James Burbidge, servant to Mr. J. L. Arden, of Dyke.

Class 11. A premium (3*l.*), awarded to Francis King, servant to Mr. J. L. Arden, of Dyke.

Class 12. A premium (3*l.*), awarded to John Green, servant to Major-Gen. Johnson, of Wytham.

Second ditto (1*l.*), awarded to Nathaniel Palmer, servant to Mr. Edward Thompson of Greatford.

CORN.

Wheat.—First premium, 3 sovs., awarded to Mr. Thomas Fountain of Deeping Fen.

Oats.—First premium, 2 sovs., to Mr. Robert Browning, of Thurlby.

Second ditto, 1 sov., to Mr. Henry Hodgkin, of Edenham.—*Lincolnshire Chronicle.*

ON TANNER'S BARK AS MANURE.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

SIR,—In your paper of the 23rd inst., "*A Tanner*" wishes to be informed if "*rotten or decayed*" tan can be made available as manure. Lord G. Bentinck has for the last year or two devoted his attention to the improvement of Stockbridge race course; he has at very great expence collected from *far* and *near* a vast quantity of rotten tan, and the result is, that the *down* is very much improved thereby as a sheep-walk; and one very respectable farmer, to whom a part of the down belongs, is so much convinced of the advantage attending the use of rotten tan as a dressing for dry pasture, that he informed the writer, that he would, if it were possible, spread it over all his dry meadows, being certain that it would very much improve them. If "*A Tanner*" were to well saturate old tan with his worn out limes, he would obtain a good and cheap manure for almost all crops, with the exception perhaps of those on the very lightest soils.

I am, Sir, your most obedient servant,

ANOTHER TANNER.

Romsey, Aug. 28, 1840.

THE CAMPDEN PLOUGHING MEETING,

HELD ON TUESDAY, SEPTEMBER 7.

It is exceedingly gratifying to all persons who take an interest in the success of agriculture, to observe the stimulus which is given by the nobles, gentry and farmers of our land, to the better performance of every practical part of farming by the spread of available information on the subject, and by advancing the skill, and, may we not say, consequent pleasures of the labourer. Agricultural meetings and ploughing matches have already done much in furtherance of the success of agriculture; and so long as they continue to be conducted free from political discussions, in friendly co-operation, and to unite sound theory with skilful practice, we may hope for yet more and more favourable results. Campden is a small town, situated in a very fertile district, in the southern part of Gloucestershire, in which the Earl of Gainsborough holds some extensive estates; the ploughing meeting to which we refer, was set on foot by his lordship; and as a first meeting it came off remarkably well. The ploughing was divided into three classes. 1st. The men to plough with a pair of horses abreast, without a driver. 2nd. Boys under eighteen years of age, to plough in the same manner; and 3rd. Ploughmen with three horses and a driver. In all, there were seventeen ploughs started for prizes; and although the morning was wet, there was a considerable company upon the field, among whom we noticed Lord Viscount Campden; and we ought not to omit the cheering presence of the agricultural labourers as spectators, who with their wives and children came to witness and participate in the pleasures of the occasion, and the rivalship of those of their companions who had severally to play an important part in the performances of the day. The ploughing however was not first-rate—the weather was very unfavourable; and it being the first meeting of the kind, the ploughmen were rather embarrassed, and not able to do their best. Between three and four o'clock, a party of about 60 sat down to an excellent dinner at the Town Hall. Lord Viscount Campden took the chair as President, and was supported on his right by the Revs. Kennaway and Money, R. W. Baker, Esq., Robert Ransome, Esq., &c.; and on his left, by the Rev. Mr. Jones, Greenhouse Keen, Esq., the High Bailiff, &c., &c

The cloth being removed, and the health of the Queen and other loyal toasts having been given, the business of the meeting was resumed.

His Lordship said it afforded him sincere pleasure to be present at the first ploughing meeting at Campden upon record; and he hoped that in establishing this ploughing meeting at Campden, it would be the foundation for improving the agriculture of the neighbourhood, and that the farmers here might follow the example set them by Mr. Baker and Lord Gainsborough's tenantry in Rutlandshire, of changing the character of the ploughing from that which was once very moderate, but was now allowed to be very excellent. His lordship made some very interesting remarks on the town of Campden and its neighbourhood, and the desire Lord Gainsborough and his family, with himself, felt to add to the comfort of the labouring classes, by promoting every institution having for its object their welfare. He was glad that the allotment system was adopted; he should have much pleasure in distributing prizes to the different cottagers who deserved them, and he hoped to see their well-intended efforts crowned with success.

The Rev. Mr. Kennaway expressed the pleasure he derived in being present, and in an eloquent speech he eulogized the amiable and excellent character of Lord Gainsborough and the family of the Noels; he had known them many years, and from his intimate connexion with the family, he could speak from his own knowledge of their liberal feelings and generous minds. He alluded in an interesting manner to the recent restoration of ancient titles to Lord Gainsborough and his son Lord Campden, upon which he heartily congratulated them; and with some feeling remarks on friendly societies, cottage allotments, and ploughing matches, as tending to improve the condition of the labouring classes, he concluded by proposing the health of the Earl of Gainsborough, which was drunk with three times three, and one cheer more.

Lord Campden acknowledged this toast, and gave prosperity to the Campden Ploughing Meeting.

Mr. Baker read the award, and his lordship distributed the prizes as follows:—

No.	Owner.	Abode.	Ploughman.
Class I.			
3.—	Mr. J. Baldwin,	Northwick Hill	Rich. Hall.
6.—	Ld. Northwick,	Northwick Park	T. Beavington.
2.—	H. Roberts, Esq.,	Paxford	John Webb.
1.—	Lord Northwick,	Northwick Park	G. Garden.
Class II.			
2.—	H. Roberts, Esq.,	Paxford	Wm. Widdows
1.—	H. Roberts, Esq.,	Paxford	J. Handcock
Class III.			
7.—	Mr. R. Reynolds,	Paxford	S. Taplin.
8.—	Mr. S. Handcock,	Old Coombe	G. Oldacre.
4.—	Mr. Rich. Keen,	Campden.	J. Carter.
5.—	Mr. Geo. Penson,	Draycott	W. Carter.

The Silver Cup, given by the Earl of Gainsborough, was presented to Mr. John Baldwin, owner of the first prize plough in Class I.

Coat, waistcoat, and hat were given by the Rt. Hon. Earl of Fitzhardinge to the winner of the first prize in Classes I. and II.

There were 24 prizes awarded to the occupiers of allotments, varying from two to ten shillings each.

Chair.—"The successful candidates."

Chair.—"The unsuccessful candidates."

Chair.—"Earl Fitzhardinge and fox-hunting."

I. Averill, Esq., returned thanks, and gave "the health of Viscount Campden."

Lord Campden remarked on his own title he was not vain enough to suppose a title alone confers dignity, or that he had anything in character more than when simply Mr. Noel; and concluded a very interesting speech by thanking them for the cordial manner in which they had received his health. Lord Campden gave "the Stewards;" amongst them he noticed the name of Mr. Baker, as one not backward in the formation of the Society. (The toast was received with enthusiasm.)

Mr. Baker, on the part of himself and brother stewards, returned thanks for the approbation the meeting had displayed in their favour, and observed, that no one could doubt the necessity of an annual meeting like the present, in a neighbourhood where a lack of improved cultivation was evident to all thinking minds. Improved cultivation could only be introduced effectually by commencing with good drainage where necessary, and with deeper and more skilful ploughing; and such desirable works of improvement could not be introduced without affording *increased* employment to the labouring classes; and in the endeavour to render service to his fellow men, he trusted that himself and his brother stewards would be found anxiously and vigorously working in this most desirable service. In the formation of societies of this description, a hearty co-operation was desirable, and nothing could be more satisfactory or more cheering than the handsome manner in which Lord Gainsborough expressed himself:—"I highly approve of the scheme; my best wishes are with you, and my *purse* to any reasonable extent." *(Cheers).* Similar were the expressions of our good and noble chairman *(continued cheers)*; and though last mentioned, not least, the Earl Fitzhardinge said, I approve of such societies, and will subscribe, and also give a good coat, hat, and waistcoat to your first prize man *(great cheering)*; therefore, under such favourable circumstances, it is the bounden duty of the officers to carry out the object of the society with regularity and effect. The speaker proceeded at some length upon the propriety of attending to rules, without which no society could prosper. The ploughing was commented upon rather severely, but he finally closed his criticism by observing, that it was a question in his mind whether this first attempt did not exceed the Rutland first attempt. Their ploughs, it was true, were curiosities; he had measured several where the shelve-board exceeded 6 feet, and in the neighbourhood, upon *light* land, turned not more than three inches deep; and from the head of the first ox to the plough handle the distance was 26 yards. The allotment system was ably advocated; and the persevering friend to agriculture concluded by proposing his friend Mr. Robert Ransome's health.

Mr. Ransome said it was exceedingly gratifying to him to receive the kind reception he had done from their noble president, and gentlemen who had assembled there on this occasion, and to be thus a guest in their company, notwithstanding some scruples he held, which prevented his joining in all that passed at their festive board. Mr. Ransome remarked on the business of the meeting, and went at length into the subject of ploughing and ploughing matches. He observed the old Gloucestershire plough at work in the field, with its mould-board nearly two yards long, which had nevertheless come in for a prize. He was glad to see the Ransome plough in the hands of the boys under 18 years of age, on them be placed his hopes of ultimate success in the art of ploughing; for they had nothing to unlearn, and were therefore in a more tractable state. Mr. R. made some practical observations on agricultural implements and their improvements; also on the great benefits of societies like the one which called them together for the promotion of agriculture, which spread a widely extended influence for good over all classes of the agricultural community, from the nobles of the land to the peasantry and labourers, whose employments were enlivened by interests and pleasures, of which otherwise they would in a great measure be divested.

Chair.—"The Judges." (Messrs. Bell, Bullimore, and Wheatcroft.)

Mr. Bell returned thanks, and gave "The Royal Agricultural Society."

Chair.—"Earl of Harrowby."

Mr. Kean returned thanks.

The Rev. Mr. Jones proposed "The Countess of Gainsborough, and the Noel family."

Chair.—"Mr. Roberts, the treasurer.

Mr. Roberts returned thanks, and gave "Prosperity to the labouring classes." Mr. Roberts stated that he hoped from the present state of the funds, they would be able at the next meeting to give prizes to shepherds, and to labourers for draining and hedge cutting; soon after which the company separated.

ON LEASES.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

Sir,—I am much gratified to observe by your report of the speeches at the meeting of the Stow-on-the-Wold Agricultural Society, that notice was taken of the interesting subject of Leases, by Mr. Beman, and replied to by Mr. Langston, the President elect of the Society. I believe that the well-wishers to the advancement of this obvious truth can desire no other than the admission of it into their deliberations, because they feel assured it has sufficient justice on its side to make its own way, if but candour and fair dealing be allowed it. I should not therefore have again troubled you with my sentiments, particularly in this busy harvest time, did I not see in Mr. Langstone's objection a very prevalent error in the consideration of this deeply interesting subject, viz., a jumbling together matters totally at variance with the true bearing of the question; and that for the want of a simple understanding of the meaning of the word lease, they arrive at conclusions adverse to it, upon grounds which have no relative bearing upon the matter. That I may not be misunderstood, perhaps it would be better I should explain what I take, and I think all the advocates for leases take and agree upon, as the true meaning of the word; it is simply the continued holding for a given number of years, and is entirely separate from all other appendages to agreements or leases, such as rent and covenants. Taking Mr. Langstone's reply on this ground, his objection to grant leases does not apply; for it arose seemingly from the cause of his tenants being bound to pay a fixed rent (so I gather), and not to the length of the term for which they held. It is clear that, had his tenants been bound in a rent to be regulated by the price of corn, his guardians would have left no cause for the exercise of that generosity which he so kindly and liberally bestowed. I would not it should be gathered from this, I am an advocate for a corn rent under all circumstances. This as well as covenants must be a matter to be left to the discretion of parties, and can in no-wise interfere with the question of length of tenure; that rests on no such disputable ground, but is based on the conjoined interest of both landlord and tenant: all agree their interests are one, and the way to make them undividedly so, is to put the tenant, as near as circumstances will admit, into the same position as though he himself were the *proprietor* as well as occupier.

I have often sought for the cause of the want of communication in farmers on the results of many of their modes of management, and though doubtless there be many to produce it, yet I find there is no difficulty whatever in learning their failures; but as the results of successful proceedings, if made public, would probably become known to the landlord, and act as a stimulant to the increase of rent in tenants at short notices, they cautiously, and, as would be generally considered, prudently keep to themselves what might operate injuriously to their interest. If there be any truth in this conjecture—and he knows, and has mixed but little with farmers who would altogether reject it,—surely it adds another strong reason for the granting of leases, that a key may be found to unlock a treasury of knowledge as yet but little looked into. Yours, &c.

Up-Marsden, Sept. 10. Edward Wyatt.

NEW PATENTS.

Theophilus Smith, of Attleborough, Norfolk, farmer, for *certain improvements in ploughs*, Aug. 15.—This invention consists in certain additions to ploughs, by means of which the breadth and depth of the furrow may be varied at pleasure, without stopping the plough; and also by some of these improvements the plane of the plough may be kept coincident with the line of draught, or set at any angle to the same.

These improvements are applied to fen ploughs as follows:—The hake to which the drag-chain is attached moves vertically upon a centre pin, which passes through the two side irons of the hake and through the beam, and the inner ends of the hake irons are connected by a forked connecting piece to a lever, which is mounted on a fulcrum pin in an upright rising from the beam.

The long end of the lever works through a guide frame, on the left hand side of which are a number of pins or studs, for holding the lever in any position in which it may be placed, a spring on the right hand side of the lever pressing and keeping it constantly between the pins.

On raising the long end of the lever, the other end of it with the connecting piece and inner ends of the hake irons are depressed, by which means the drag-chain attached to the other end of the hake is raised, thereby causing the share to cut deeper into the earth. By depressing the long end of the lever the drag-chain is lowered, and the depth of the furrow proportionably diminished.

Another arrangement is likewise described, for lowering and raising the hake of a swing plough in a similar manner.

When these improvements are applied to wheel ploughs, the end of the plough beam is prolonged, and is supported by a roller on the cross rail of a frame or gallows, which is mounted on two small wheels, and is drawn by the drag-chain, being fastened to the plough-beam by a chain, and also by a bar, the end of which is bolted to the top rail of the gallows; by this bar the top of the gallows can be moved inwards or outwards. By drawing the gallows inwards, the roller raises the end of the plough beam, and thereby diminishes the depth of the furrow; or by pushing it outwards the end of the beam is lowered, and the depth of the furrow increased.

In order to keep the plane of the plough coincident with the line of draught, and for setting it at any angle to the same, the following arrangement is adopted, being adapted to wheel ploughs:—The roller that carries the plough beam is placed between two uprights, which pass through the top rail of the gallows, and carry a horizontal toothed rack. Into this rack a pinion takes, and being turned causes it to traverse to the right or left, thereby giving the required deflection to the body of the plough.

Various other modes of applying these improvements to ploughs are described.

James Ransome and Charles May, of Ipswich, Suffolk, machine makers, for *improvements in the manufacture of railway chairs, railway and other pins or bolts, and in wood fastenings and tree nails*, Aug. 15.—This invention consists,—Firstly, in using metal side plates in the sand mould for forming the sides of the chair, and in using metal cores to form the cavity in the chair for the reception of the rail.

Secondly, in forming wooden pins or bolts to be used upon railways, by forcing them into moulds suitably formed for retaining them under compression, and submitting them to the action of heat when under compression in the moulds, until the elasticity of the wood is sufficiently overcome. The mould is a cylindrical tube, slightly enlarged towards its mouth. The pins will retain the form thus given to them until they are driven into damp sleepers, when the moisture causing them to expand will fix them firmly.

The wood fastenings or wedges and tree nails are formed in a similar manner.

Claim first.—The mode of casting railway chairs by means of metal side surfaces in sand moulds, with metal or other cores as described.

Claim second.—The mode of casting railway chairs by applying metal cores as described.

Claim third.—The mode of manufacturing railway and other pins or bolts, and wood fastenings and tree nails, by forcing them into moulds so formed as to retain them under compression till the elasticity of the wood is sufficiently overcome.

Claim fourth.—The mode of manufacturing railway and other pins or bolts, and wood fastenings and tree nails, by subjecting them to heat, when under compression in moulds as described.

William Edward Newton, of Chancery-lane, mechanical draftsman, for *improvements in obtaining a concentrated extract of hops, which the inventor denominates " Humuline,"* (being a communication), Aug. 15. —The hops are dried in a stove or oven heated to 86° Fahr., and when brittle are rubbed through a sieve, the meshes of which are about 1-10th of an inch wide.

The coarse powder thus produced is then placed in a closed cylinder, and as much alcohol is poured on it as the powder will absorb, and a further quantity is added until a layer of alcohol 1½ inch deep covers the powder; the contents of the cylinder are then submitted to considerable pressure, and allowed to remain in this state for twenty-four hours, after which the alcoholic tincture is drawn off into a tub. The alcohol is now washed out of the powdered hops by adding water to them, until the liquor that runs out of the cock is clear and colourless; this liquor is then again added to the hops, and they are macerated in it for forty-eight hours. After this the liquor is drawn off, and the hops are again washed with fresh supplies of water, in order that no extract may remain in them.

By this process the following products are obtained, viz., the alcoholic tincture, holding in solution the essential oil, and the ordinary decoction, held in solution of water. These three products are united into one homogeneous mass called "Humuline," in the following manner:—The alcoholic tincture and essential oil are placed in a suitable vessel, and by means of a water bath provided with a still head are submitted to the process of distillation, in order to drive off the alcohol, which by this means is obtained perfectly colourless; the essential oil remaining in the vessel with the residuum, which is a brownish yellow resin, covered with a layer of yellowish liquor some inches in depth, composed of a watery extract. The aqueous decoction to which this extract is added, is then evaporated by an open fire to the consistence of syrup; it is then removed to the water bath and evaporated to nearly a solid extract. This extract is mixed with the resin, which has been previously softened or melted by the water bath, and the nearly solid extract thus produced is called "Humuline."

In using the "Humuline" in the manufacture of beer, 2 lbs. of it is equal to 6 lbs. of common hops.

Another extract is obtained from hops, by placing them either in a powdered or whole state in a closed cylinder, and submitting them to the action of steam; by the partial condensation of the steam, a liquid extract of hops is obtained, the watery particles of which may be evaporated until it becomes of the same consistence as the "Humuline."

Claim.—The methods herein described of making or producing a concentrated extract of hops.

William Hensman, of Woburn, Bedfordshire, m chinist, for *improvements in ploughs.* Enrolment Off June 30, 1841.—This invention consists of two meth of applying coulters to ploughs so as to admit of eas adjustment. In the first mode, a projection is formed on one side of the plough-beam, serving as a fulcrum on which the coulter moves; on the other side is a plate which partly embraces the beam. Through this plate the end of two eye-bolts pass, and are secured by nuts, and through the eyes of these bolts the coulter is passed, resting against the projection before noticed; by tightening the nut of the upper or lower eye-bolt, the end of the coulter will be made to advance towards or recede from the land side of the furrow. In the second arrangement, the projection, instead of being on the beam, is on a plate applied to one side of the beam through which the eye-bolts pass; the lower bolt also passing through the beam serves as an axis to the plate. An adjusting screw is attached to the end of the plate by a pin-joint, its upper end passes through a projection in the beam, and has a nut screwed on to it. In this arrangement the coulter has two adjustments, viz., it can be made to advance to or recede from the land side of the furrow by the eye-bolts and screw nuts; and it can also be made to advance to or recede from the front of the plough by raising the end of the plate, which is effected by turning the nut on the adjusting screw. The claim is—First, to the mode of adjusting coulters of ploughs by the combined means of a projection and screws or eye-bolts. Secondly, to the mode of adjusting coulters by means of a plate, and adjusting and holding screws when in combination with the projection and eye-bolts.

ON STONE-DRAINING, AND THE IMPLEMENTS USED IN EFFECTING IT.

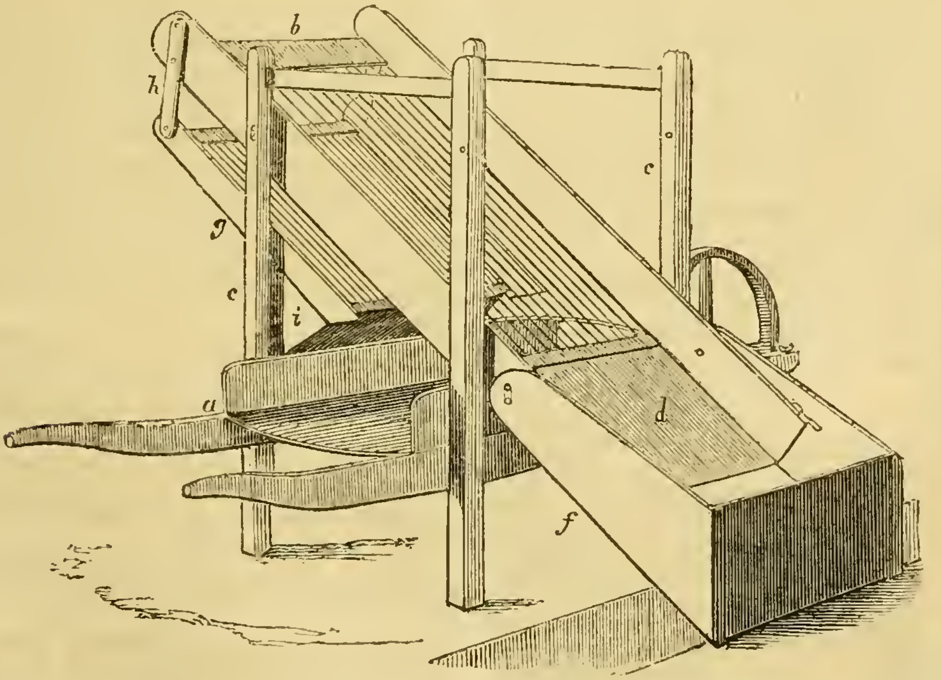
BY MR. JAMES ROBERTON, LADYRIG, ROXBURGHSHIRE.

(From the Quarterly Journal of Agriculture.)

When stone-draining is carried on upon an extensive scale, the materials are, in general, procured from quarries, and it frequently happens, that before the stones are properly prepared, they become so intermixed with earth and rubbish, as to be almost unfit for use; and to separate them thereafter, either by filling them into the carts with the hand, or by means of gridiron shovels, I have at all times found to be both an expensive and inconvenient operation. To obviate this difficulty, I constructed, some years ago, a few very simple implements, by the use of which I have been enabled to execute an extensive drainage, not only in a much more perfect manner, but at an expense considerably below that of any other method which I had adopted. This arrangement has also tended materially to simplify this important operation, inasmuch as, with the exception of the work of one confidential man, the whole may be done by contract; so that any one may at once make himself acquainted with the whole expence of any extent of drainage; and though he may be practically ignorant of the subject, and absent from the scene of operations, he may feel confident, that if this his one man do his duty faithfully, the work will be executed strictly according to the terms of agreement: for, in fact, while the man is performing his own part of the work, he cannot avoid detecting any error, and he should have the power of immediately correcting it.

Any implement to be generally useful in farming operations should be simple in its construction, but more especially so in its use; and while such an one enables the workman to perform the work in a more perfect manner, it should, at the same time, tend to diminish expence, otherwise it will, in most instances, be thrown aside. Whether all or any of the implements which I am using possess these qualities, and are likely to become generally useful, I shall put it in the power of any one to judge for himself, by giving, in the first place, a short description of them, and of the manner of using them, and then stating the usual quantity of work which has been uniformly performed with them in a given time.

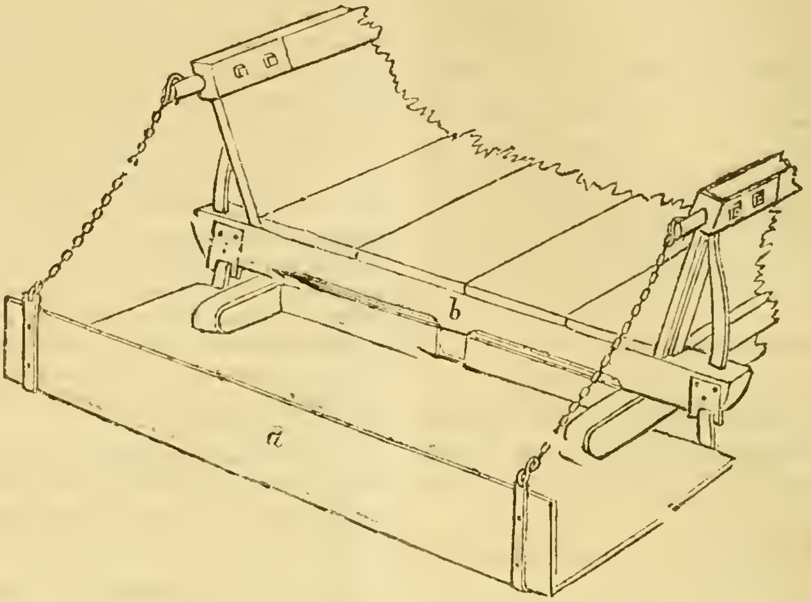
FIG. 1.



They consist of—1st, A portable screen or harp.—This consists of a wheelbarrow *a* (fig. 1), over and across which is suspended a screen *b*, having the bars more or less apart, according to the description of materials intended to be used. The upper end is hung upon two posts *c c*, about three feet above the barrow; the lower end rests upon the opposite side of the barrow. To this lower end is fixed a spout *d* having a moveable board *e* attached about ten inches from the lower extremity of it, by means of two arms *f*. Another screen, *g*, about one-half the length, and having the bars about half an inch apart, is hung ten inches below the larger one, and hangs parallel to it. The upper end of it is fixed by means of two small iron bars *h*, to the upper end of the larger screen; the lower end rests upon a board *i*, sloping outwards upon the side of the barrow opposite to that on which the spout *d* is situate.

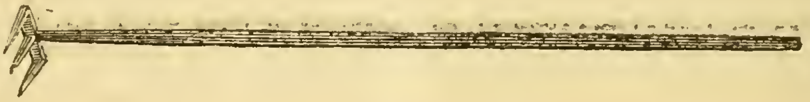
2nd.—A moveable trough, or, as it is commonly called, a tail-board *a*, which is attached to the hind part of the cart, for the purpose of receiving any stones that may drop, while the workmen are shovelling them out of the cart. A portion of the hind part of a cart *b*, shows the manner in which it is fixed to it.

FIG. 2.



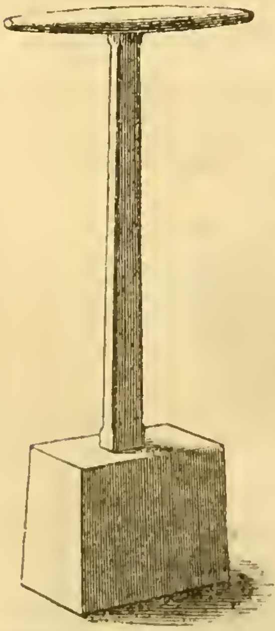
3rd.—A small iron rake used by the workmen in charge of the screen, for the purpose of making the surface of the larger stones of a uniform height, before being covered with the smaller.

FIG. 3.



4th, A beater.—This is a square piece of wood, the width of the drain, used for beating the smaller stones into the interstices of the larger ones, and thus levelling the surface of the drain.

FIG. 4.



When the screen is used, all the earth taken out to form the drain should be thrown to one side of the drain: the barrow is then placed on the other side, so as the board *e* fixed to the lower end of the spout *d* shall reach to the opposite side of the drain. The cart is placed upon the same side of the drain as the barrow, but a little in advance, the workman, having fixed the tail board to the hind part of the cart, then shovels the stones over the upper end of the screen. In doing this a little attention is necessary on the part of the workman. It sometimes happens that the stones are thrown with considerable force from the shovel, by which they are made to fall nearly about the middle part of the screen, and thus the full effect of the screen is not produced. The proper method is, to rest the shovel upon the upper part of the screen, which may be shod with plate iron, and merely turn it over, by which a separation of the stones is at once made; the larger roll down, strike the board, and drop into the bottom of the drain, without disturbing the earth on either side; the smaller pass through the first screen, and being there separated from the rubbish by the second screen, fall into the barrow, whilst the rubbish descends to the ground on the side of the barrow furthest from the drain.

The one man takes charge of the filling of the drain; his duty is to move the barrow along the side of the drain, as this is filled with the larger stones to the required height; to level them with the rake; to shovel the smaller from the barrow, spread them regularly over the top of the larger, and beat them down with the beater, so as to form a close and level surface through which no earth can pass. The stones are so broken in the quarry, as to pass through a ring four inches in diameter; a great proportion of them, however, are much smaller, and when filled into the carts generally about one-fourth are so small, or if not, should be made so small, as to pass through the bars of the upper screen, which are, for such materials, about 1¾ inch apart, and then they will be found sufficient to give to the top of the drain a covering of from two to three inches in depth, which being beaten closely down, require neither straw, sod, nor anything else to cover them.

The only possible use of a covering of straw or sod, is to prevent any of the earth, when thrown back into the drain, getting down among the stones; but it is evident that such a covering will very soon decay, and then it becomes really injurious; because, being lighter than the soil, it will, when decomposed, be easily carried down by any water that may fall directly upon the drain; and if the surface of the stones has been broken so small as to prevent the drain sustaining any injury in this way, then the covering itself must be altogether superfluous. But further, it will be found that the effect of this practice, in many cases, is still more injurious. When drains are filled in the usual way, whether with land or quarried stones, a man, or sometimes a woman, is appointed to level the surface and put on the straw or sod; and the person appointed to this duty knows that his master expects him to do a certain number of roods per day, and finding the stones difficult to break, he too frequently contents himself with merely levelling the surface, and by means of the covering the fault is effectually concealed. By the method, however, of separating the small stones from the large, the whole expence of breaking is saved, and a covering is given to the drain, on which time will produce no change. As soon as possible after the drain is finished, the earth should be filled in; and this is done most easily by the plough, taking care that the horse does not go into the drain until at least one furrow is thrown over the stones.

I shall now state the quantity of work which has been uniformly performed for upwards of three years, during which fully sixty miles of drains have been executed. All the work is done by contract, with the exception of carriages, and filling the stones into the drains; the carriages may also be contracted for, but the filling in of the stones should, at all times, be the work of a confidential person, as upon the careful performance of this depends the whole success of the operation. The contractor opens the drains, quarries the stones, breaks and fills them into the carts, at a certain price per lineal rod of six yards. The dimensions of the drains are 33 inches deep, 7 inches wide at bottom, and 9 inches at the top of the stones, which are filled to the height of 15 inches. The cubical measure of the stones, is thus 15 feet to each rood of drain.

In regard to the quantity of stones which may be considered sufficient to constitute a permanent drain, a great variety of opinions prevail. I may remark, however, that while permanency is one important object to be attained in draining, economy must also be observed, otherwise the extent of improvement may be very materially curtailed. And further, I apprehend that permanency does not always depend so much upon the quantity, as upon the manner in which the stones are prepared and put into the drain. In the execution of drains, no matter what description of materials are used, the same principle ought at all times to be kept in view, viz. that there shall be an open space at the bottom sufficient to contain the probable quantity of water, and that this shall be so protected that, while the water is permitted to filter into the drain, no earth or mud can get down to interrupt its flow. A tile is formed strictly upon this principle, and when soles are used, and a slight covering of gravel or small stones is put on the top, no drain can be more perfect. In like manner, when broken stones alone are used, there ought to be as many clean stones of a proper and uniform size put into the lower part of the drain as will contain the quantity of water; and these should be covered with from two to three inches of very small stones, which, when slightly beaten down, will form a close and level surface, sufficient not only to prevent any earth from getting down, but also to act in some measure as a filter. In all cases, too, the materials used to form the drain should be placed so deep, as that no depth of ploughing shall reach within several inches of them.

I have already described the manner in which the implements are used. Suppose, therefore, that one set of carts* is employed, the drivers, or if boys are driving, then one man is employed to unload them, and one man to manage the barrow. In this way, the dimensions of the drains being as above stated, from 60 to 70 roods of them can be filled daily during summer. The lineal length of drains filled of course depends upon the dimensions: but if the work is properly arranged, one man will unload without any difficulty at the rate of 3½ cubic yards per hour. I shall, by way of illustration, give two examples of the extent of work performed in a given time.

In the summer of 1840, I contracted for the execution of 4000 roods: the filling to commence on the 1st of July, and the whole to be completed on the 12th of August. In this case, there were two sets of carts and two screens employed. The contractors having previously prepared a few hundred cubic yards of stones, and opened a part of the drains to half the depth, at the appointed time the filling commenced, and the drains were opened to their full depth as the work proceeded. The lines of drains were about 400 yards or 66 roods in length, and one line was uniformly the work of a day. Having been frequently interrupted by wet weather, the full quantity contracted for was not completed; but about the second week of August 3300 roods were finished, in which, including an extra quantity for leading drains, were buried nearly 2000 cubic yards of stones.

Again, in the preceding summer of 1839, from the 1st of July to the 5th of August, 2100 roods were executed with one set of carts and one screen. In this case, the depth of drains was 28 inches, and the quantity of stones only from ten to twelve inches in depth, or about ten cubic feet per rood; and the work performed daily was from 90 to 110 roods.

I may remark, that when extensive drainage is carried on, it is important that a plan of the fields should be made on which should be correctly delineated every line of drain, with the depth and quantity of stones.

In regard to the expense of executing stone-draining, the description of quarry from which the stones are procured, the distance of carriage, and the nature of the land on which the drains are to be opened, and, I may add, the state of the weather, all tend so materially to affect the price, that no general estimate can possibly be made; I shall therefore only give a detailed statement of the actual expence per acre of the two examples before referred to.

1st.—Expence of drains 33 inches deep, extending to 70 roods of 6 yards per acre:—

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* What is understood here by a *set* of carts, is as many as will keep one man fully employed unloading.

	£	s.	d.
Opening drains at 5½d. per rood......	1	12	1
Preparing stones at 4d. do............	1	3	4
Carriage of stones at 4½d. do..........	1	6	3
Unloading carts and moving barrow ¾d. ditto..............................	0	4	4½
Filling in earth ¼d. do................	0	1	5½
Extra expence of leading drains........	0	10	0
	4	17	6

2nd.—Expence of drains 28 inches deep:—

	£	s.	d.
Opening drains at 4d. per rood........	1	3	4
Preparing stones at 2½d. do............	0	14	7
Carriage of stones 2¾d. do............	0	16	0½
Unloading carts and moving barrow, ½d. ditto..............................	0	2	11
Filling in earth, ¼d. do..............	0	1	5½
Extra expence of leading drains........	0	10	0
	3	8	4

The soil is in general a loam of various depths incumbent upon an open subsoil. Drains, therefore, from 30 to 36 feet apart, or about 70 roods per acre, have usually been found sufficient. In the first example which I have given, the proprietors, the Governors of the Merchant Maiden Hospital, Edinburgh, bear the expense of opening the drains; hence the work is executed in such a manner as I conceive will ensure a permanent improvement of the estate. In the second it was done upon a lease of twelve years' duration wholly at my own expense, and at a much cheaper rate, but, of course, more superficially. It is, however, worthy of remark, that the immediate effect in both cases is much the same; and to serve merely the temporary purpose of the tenant, I have no doubt that the one will prove as beneficial as the other. To the proprietor, however, the case is very different, because by the former method an improvement is effected which may be guaranteed to endure for several leases. It is very doubtful whether by the latter mode it can be ensured much beyond the existing lease. That the proprietor should at all times become a party, and thereby secure the permanent improvement of his estate, is now very generally admitted, and yet the plan is not always acted upon. It may, however, be asserted, without much fear of contradiction, that improvements by thorough-draining will never become general, nor be made permanent, unless the assistance of the landlords be obtained. When left altogether to the tenant, want of capital and the shortness of the lease will tend at all times to limit the extent of improvements, and they will seldom be made permanent, because the true interest of the tenant is to excute the work only in such a manner as will secure his own temporary purpose. To the proprietor, among the many inducements to improve his estate by draining, the greatest, at least the most satisfactory, is, that it yields an immediate and large return. If he has no spare money, he has only to borrow it at four per cent. and lend it out at six, a per-centage which no tenant will refuse, and upon a security, too, undoubted,—that of his own property. No one will deny that a proprietor is as justly entitled to receive a fair return for money laid out on the improvement of his estate as he is for that laid out on the original purchase of it. Hence, I would assume, as a general principle, that for every penny laid out by a proprietor upon ameliorations of any kind, he shall have an assurance of a return either immediate or prospective—immediate in the form of interest, or of additional rent—prospective in the increased value of his property, by which, in after leases, it will yield such an increase of rent as will repay the present outlay. Again, as regards a tenant, I would assume that he will make every improvement the subject of a calculation of profit or loss for *one lease only*, and that he will not lay out any money *merely* for the purpose of making improvements to extend beyond that period. Let him even have an assurance of a renewal of his lease; still before that takes place a revaluation will be made of the farm, and in that valuation will be included his improvements, so that, while he originally disbursed the whole expense of them, he will in reality have to pay for them again in the shape of additional rent.

In the preceding examples both methods have been tried, and both have succeeded. And I think they tend to prove, in the first place, that the difference in the expense of the two methods is very nearly equal to what may be deemed a fair allowance for the landlord; and when it is taken into consideration, that by the cheaper mode the improvement of a greater extent of land is completed in a given time without materially increasing the number of horses upon the farm, it is doubtful whether in the end it may not prove the more profitable one for the tenant; and, in the second place, it proves that, to a tenant of capital, the assistance of the landlord is by no means so essential a matter as to deter him from engaging in an improvement of the kind. For, as a mere speculation, he may embark his capital in it with confidence; and let prices of produce vary as they may, the money expended in this way will always yield him a fair return.

PURIFICATION OF DAMAGED WHEAT.—The following account of a new process which has been invented by M. Emile Bouchotte, for the purification of damaged wheat, is given in the *Moniteur Industriel*:—" A great improvement which has for some years past been introduced in the art of grinding, is the cleansing or purification of damaged wheat, either by the dry or the humid method. The winnowing sieves of M. Niceville, which operate by centrifugal force, are quite sufficient, when the wheat is of tolerably good quality, to clean the epidermis of the grain, from which it is required to take away the mould or small tuft opposite the germ; which operation is performed very well by the rough surfaces of the moveable vanes, and of the case which encloses the apparatus, especially when to this apparatus is added the action of a good ventilator of compressed air and well arranged sifting cylinders. Such an apparatus, if well contrived in all its parts, answers for purifying wheat in the dry method, when the damage it has sustained is only external. When, however, the wheat is damaged by mildew, or the smut, or if wheat that was once of good quality is damaged by some accident which gives it a mouldy smell, it is necessary to have recourse to purification by the humid process; that is to say, by washing and artificial drying. In M. Bouchotte's plan, the washing is performed with quickness, which at the same time that it exposes the grain to the action of water sufficiently long to be well cleaned, does not permit it to be saturated. When this operation is finished, the grain passes into a very brisk agitator, which detaches by the agitation of each grain a portion of the water which adheres to the skin. From that it proceeds to the drying apparatus, which differs altogether from that adopted by M. de Maupeon, for in M. Bouchotte's plan atmospheric air from a centrifugal ventilator, which is turned by the mill at the rate of a thousand times a minute, is forced into a chamber heated by steam to a high temperature. In this chamber the external air becomes heated, and its action on the wheat thus dries it with great rapidity. It is this difference in the plan of drying in which the real improvement of M. Bouchotte's plan consists, for by knowing the number of cubic metres of air injected in the apparatus, the quantity of caloric given out by the steam, and also the quantity of water absorbed by the wheat during the washing, the operator is enabled to determine the time requisite for the wheat to remain in contact with the hot air to become sufficiently dry."

ON MUD.

Mud, (mod, Ger.; madeo, Lat.; μαδαω, Gr.; to be damp or moist,) is the sediment, slime, or uliginous matter, found in the bottom of ponds and of all stagnant waters, and is mostly composed of the earthy particles collected by the water from the neighbouring grounds, and deposited in the hollow places where the waters congregate, and lose the power of further progress. Leaves of trees, and various collections of animal and vegetable matters, will be added in many situations, and the composition of mud will in every case be regulated by the nature of the substances that come within the reach of the waters that flow into the pond. In the vicinity of woods much vegetable matter will be found in mud; near farm-yards, both dung and urine will be found in the ponds, while in open situations, earths and sands will be the principal materials washed down and carried along by the rains and currents. Mud in any form, is an excellent manure; the particles are in a minute state of reduction, and are in the fittest possible form for blending with the soil—becoming a part, and adding to its fertility. Ponds are most conveniently emptied during summer, when the mud may be laid in a heap in a convenient place, and be frequently turned over in order to bring into life and destroy the seeds of vegetables that may have been deposited by the water, and which will lie many years in a dormant state, and again vegetate on being exposed to air and light. When this purpose has been effected, a good mixture of slaked or dead lime or of stable dung may be added; and after being again turned over and mixed, the heap will be ready for being applied as a top-dressing, and may be used at the rate of 20 to 30 cart-loads to an acre of grass land, and must be bush-harrowed and rolled during the first dry weather in the spring after application. All such composts used on grass lands should be spread by shovel from the carts without laying it in heaps, the bottoms of which are usually left too rank, and require much pains to spread abroad; by spreading from the carts, the work is finished at once, and for that purpose a man will be required to assist the carter in spreading on the land, and to keep the carts moving as quickly as possible; and that little time be spent in standing, two or three or more carts may be used as distance may require.

Mud may be laid on fallows or on corn lands previous to ploughing for a crop, or on any grass lands in a fresh unmixed state, and benefit will be derived in all cases; but it is more agreeable with our notions of the action of manures, and with the results of our most approved practice, to allow it a time to dry, and to turn the mass repeatedly, and by thus reducing and blending the terrene particles, facilitate the mixing with the soil, and consequently the action of the various substances in producing food for plants. The dry state is also much preferable for equal distribution and incorporation; while in a moist state, it will adhere less or more, and be spread in lumps. The earths in mud being in a reduced state, do not require a destructive solvent, and caustic lime is not required, as it would corrode and dissipate the vegetable matter.

The mixing of mud or any earthy substances with farm-yard dung, may not be advantageous though it has been much recommended; the fine earths and straw mixed together, make the future management inconvenient, and if the latter substance be decomposed to the fineness of the earths, much loss of bulk will ensue. Earthy materials are best mixed with similar substances.

"Fleech" ouse or sea mud, is found at the mouths of rivers which admit the tide, and is usually deposited in bays and corners where the easy motion of the waters allows it to settle. Spaces of land are also covered by the flowing of the tide, and in many cases the soil forms a good manure. It has been conveyed by water to considerable distances, and mostly applied unprepared on land being ploughed for crop, where it not only yields immediate support to the crops, but adds to the staple of the soil.

It has been found very useful in improving mossy lands, but in other instances the repetition of heavy doses was not attended with any benefit; and in many places, the use is entirely neglected from the substances producing no effect on any crop where it has been fairly tried. The quality is various, the carriage heavy, and the effect very uncertain. J. D.

VARIETIES OF WHEAT.

TO THE EDITOR OF THE MAIDSTONE GAZETTE.

Sir,—I much regret that my engagements prevented my being present at the meeting of the Maidstone Farmers' Club on Thursday last, when the subject of discussion was appointed to be "the best sorts of wheat to sow," a subject in my opinion of the greatest importance, and one I felt extremely desirous of hearing the opinion of my brother members upon. Being deprived of that pleasure, and also of an opportunity of giving my own, I will, with your permission, endeavour to compensate for the latter by occupying a short space in your columns on the subject.

The sorts of wheat usually sown in the Weald of Kent, are the white and brown Thicksett, Duke William, Peacock, Hoary White or rough chaff, Golden Drop, Silver Drop, and some of the newly introduced sorts, such as Whitington, Chevalier, &c.

In making a selection of the sort of wheat to sow, the following important considerations should never be lost sight of:—1st, the soil, whether it will be cold, unkindly, and wet, or the reverse; 2ndly, whether or not it be well manured, and in good heart; and 3rdly, whether or not it will be subject to any peculiar casuality, such as mildew, &c.

These points determined, another subject offers itself for consideration. Each sort of wheat possesses peculiar properties; some are delicate and tender, others hardy, some are more subject to mildew than others, some produce more straw than others, some sorts are very stiff in the straw, and others are weak and readily get laid. From these remarks, and many more that might be made, if I did not fear trespassing too much, it will appear that selecting seed for a field intended for wheat is an important matter. My selection would be as follows, arising from my own experience, the land in my occupation being for the most part a stiff wet soil. I think I am not wrong in saying brown wheat is more hardy than white, generally speaking. This impression has led me to make choice of brown wheat, for the most part, and having tried several sorts, I believe the Golden Drop to possess the required properties for my land; that is, it yields well, is short and stiff in the straw, and very hardy. It, however, requires constant change of seed, and very particular care in preparing, being much addicted to smut. My practice is to steep it in vitriol, which is a certain preventive.

The little white wheat I sow is of the Hoary White or rough chaff, a kind that is short, and stiff strawed, and generally yields well, but requires the land to be in pretty good heart; it is a small-berried wheat and not objected to by the millers.

I have tried most of the sorts of wheat mentioned above, and the results on my grounds were as follows:—

The *Thicksett* did tolerably well, but fell short of the Golden Drop in the yield. The straw is stiff and good, and the quality of the wheat superior to some others.

The *Duke William* suits my land next to the Golden Drop, produces a better sample, but not so hardy, and readily goes down.

The *Peacock* is a white wheat, appears tender. It never did well on my ground. If it becomes slight on the land from any cause, it never well fills up afterwards, as some other sorts did. I have, however, seen on warm genial soils, a good crop grown of this sort.

The *Silver Drop* is a good yielding wheat, very stiff in the straw, which runs to a good length. It is less liable to mildew than any other sort I know, but is very tough to thrash, and looks a little flattering upon the ground.

The *Whitington* I have been altogether unsuccessful with. The straw is long and weak, and the yield with me small. I should say it was very unsuitable for wet stiff land.

The *Chevalier* is a better wheat by far than the last mentioned. It runs to a moderate length in the straw, is close and compact in the ear, and on suitable soils grows a good sample, but requires a warmer soil than mine.

The *Salmon* wheat is also sown a little. It produces a moderate quantity of straw, the ear is close and compact, and the sample of very fair quality generally, but seldom weighs very heavy. The straw is white, and the wheat of a salmon colour, from whence it derives its name.

In conclusion, I beg to say that no wheat should be sown without change of seed as often as possible, and that change should be from situation and soil as different as can be. As far as quality of soil is concerned, I should always prefer having it from a poorer soil than the one intended to sow it on.

Your insertion of the above in your next publication will oblige,

Sir, yours most respectfully,

Staplehurst, Sept. 1. W. Barnes.

AN ACCOUNT of the Quantities of Wheat as purchased in the market of London, with the Average Price thereof, in each week during the months of July, August, and September, in the years 1820, 1830, and 1840, as returned to the Inspector of Corn Returns. And also a Return of the General Average of the Kingdom for the like period, and the Six Weeks' Average ending 11th of August, 1840, exclusive of the London Market, with the Rate of Duty chargeable thereon, inclusive and exclusive of the said market.

Weeks ended.	London Market.			Kingd.	
	Number of Qrs.	Average Price:		Average Price.	
1820.		s.	d.	s.	d.
1st of July	4,028	73	1	70	8
8th of July	6,835	74	4	70	6
15th of July	5,498	74	9	70	5
22d of July	5,933	78	5	71	0
29th of July	6,706	79	6	72	3
5th of August	8,065	80	3	73	9
12th of August	4,844	79	5	73	9
19th of August	5,860	79	2	73	5
26th of August	6,322	77	6	72	9
2d of September	6,202	76	9	72	2
9th of September	3,852	74	8	71	0
16th of September	4,851	72	3	69	3
23d of September	6,450	71	1	65	10
30th of September	6,042	67	1	63	6
1830.		s.	d.	s.	d.
2d of July	4,107	72	7	68	6
9th of July	5,342	72	2	69	6
16th of July	4,212	72	3	70	3
23d of July	3,633	74	9	72	8
30th of July	5,158	76	0	74	11
6th of August	3,007	76	0	74	11
13th of August	3,554	74	7	73	4
20th of August	3,255	72	1	71	4
27th of August	3,023	71	10	70	5
3d of September	2,478	67	6	66	7
10th of September	3,888	64	9	62	4
17th of September	5,290	60	9	60	2
24th of September	3,420	61	4	60	8
1840.		s.	d.	s.	d.
3d of July	8,813	73	11	67	8
10th of July	9,552	74	6	68	6
17th of July	9,598	75	8	69	6
24th of July	11,235	79	4	71	4
31st of July	14,960	80	5	71	11
17th of August	19,500	80	2	72	10
24th of August	12,613	78	5	72	4
21st of August	15,703	78	10	72	7
18th of August	15,437	79	6	72	4
4th of September	8,000	74	7	68	11
11th of September	5,097	68	8	65	4
28th of September	4,629	68	1	64	2
5th of September	6,010	66	1	64	1

Six Weeks' Average of the Kingdom, exclusive of the London Market.		Actual Weekly Duty, including the London Market.		Duty which would have been paid exclusive of the London Market.	
s.	d.	s.	d.	s.	d.
70	1	6	8	10	8
70	6	6	8	10	8
71	2	2	8	6	8
71	3	2	8	6	8
71	8	2	8	6	8
70	10	2	8	6	8

TENURE OF LAND.

(MR. DUNCAN'S HISTORY OF GUERNSEY.)

One of the most curious points about the agriculture in Guernsey, is the tenure of land—a mode by which the tenant possesses the fee simple, subject to an annuity in corn.

"An Island whose productive surface thus consists of little more than ten thousand acres of orchard, garden, arable, and pasture land, cannot be expected to afford a great variety or any very enlarged system of agriculture. There are, however, circumstances connected with the tenure of property, its extreme sub-division and fertility, and with the numbers and comforts of its inhabitants, which may suggest useful reflections to the farmer, the political economist, and the statesman of large countries. The tenure of property partakes of the double nature of land held as a farm subject to the payment of annual rents, and as land held as freehold in perpetuity. A purchase may be made by the immediate payment of the price agreed upon; or by the payment of a part only and the conversion of the remainder into corn-rents to be annually paid; or, finally, by converting the whole of the price into such rents. In the two last cases, where a part of or the whole of the price is stipulated for in annual rents, the purchaser is to all intents and purposes as much the proprietor as in the first case, where the whole price is paid down in cash; and so long as the stipulated rents are paid, he and his heirs can never be disturbed, but hold the land as freehold for ever. To the former proprietor the rents are guaranteed by the land sold, and by all the other real property held at the time of sale by the purchaser free from incumbrance; and the rents being transferable, and such property being always in demand, money can be raised by their sales with as much ease as it could before on the land itself. Thus, without the necessity of cultivating the soil, the original possessor enjoys the net income of his estate, secured on the estate itself, which he can resume in case of non-payment; while the purchaser, on the due payment of the rent charged, becomes real and perpetual owner, having an interest in the soil far above that of farmers under any other tenure. Experience has proved, that under this tenure a spirit of industry and economy is generated, producing content, ease, and even wealth from estates which in other countries would hardly be thought capable of affording sustenance to their occupants. And thus also arose two classes mutually advantageous to each other—the one living on its income, or free exercise of trades or professions; the other composed of farmers raised to the rank of proprietors, dependent alone on their own good conduct. The faculty of acquiring land in perpetuity, without paying any purchase-money, is undeniably proved to have been of infinite benefit to the people of this island; but it is obvious that this source of so much good could never have existed, or could never continue without a corresponding security, well guaranteed to the original proprietor of land, before he parted with it.

"This relation of landlord and tenant being peculiar to the Channel Islands, it may be advisable, for the sake of English readers to whom the system is a novelty, to explain it more fully by an example. Suppose A possesses land valued at twelve hundred pounds, which he desires to *sell* as we should say in England, or to *give to rent*, as the phrase runs in Guernsey, the following would be the process. A would either convey his estate to B, the purchaser, wholly in quarters, without receiving any cash, or, as is the more usual mode, he would receive one fourth of the price, and convert the remainder into quarters. One Guernsey quarter is equivalent to twenty pounds sterling, local currency. In the first case, B would have to pay annually to A sixty quarters, the interest on twelve hundred pounds, the assumed cost of the estate at the rate of five per cent. per annum; in the second case, he would have to pay annually forty-five quarters. The reason why it is usual to pay one-fourth of the purchase-money in cash is, that such payment may be some guarantee to A that B will faithfully work the estate, and pay the rent regularly; for should the rent run in arrear, then A, by a process called *saisie,* may totally eject B from the property; and the three hundred pounds paid by B when the contract was passed would be lost to him for ever. In this manner, then, is the seller or landlord secured in the receipt of the equivalent for which he has parted with the estate. As soon as the contract is executed, B can fell timber, convert meadow into arable, and arable into meadow, and perform any and every act that a tenant in fee-simple can do in England. The estate thus acquired descends to the heirs of the blood of the purchaser, lawfully begotten, and on failure of direct issue to his nearest of kin. Sometimes these annual quarters are made permanent, but most frequently they are redeemable by certain instalments, as the buyer and seller may have agreed."

PREPARATION OF HAMS IN KENTUCKY.

(FROM THE YANKEE FARMER.)

MESSRS. GAYLORD AND TUCKER.—There have been published many modes of curing bacon, and in the cases in which these have been the result of experience, they may all be successful, and entitled to the confidence of the public. Some, perhaps, are more simple, less laborious, and more uniformly safe than others. The following mode has stood the test of thirty-five years' experience without a single failure, of twenty-seven years in Spottsylvania county, Virginia, and of eight in Kentucky, where I at present reside. I can, therefore, recommend it as a safe and certain mode of making sound, sweet bacon. The salt used in Virginia was Liverpool blown salt, in Kentucky the Kanhawa and Goose creek. The ashes from hickory or the sugar maple.

I will now begin at the beginning, and describe the whole process minutely, premising, however, that, to have good bacon, we must have good pork, neatly dressed or cleaned. It is important that the hogs should be killed in proper weather, by which I mean that the weather should be such that the hogs, hung up after they are cleaned, should be not only cold to the touch, but feel stiff, not frozen, after hanging up till the animal heat is out. I always kill on one day, and cut out and salt up the next. If the weather is quite cold *after they are stiff,* I put the hogs in the cellar that they may not freeze; if the weather is moderately cool, I let them hang up in the air all night. The cutting out is the next operation. This need not be described further than to say that the back-bone or chine should be taken out, as also the spare-ribs from the shoulders, and the mouse pieces and short-ribs or griskins from the middlings. No acute angles should be left to shoulders or hams. In salting up in Virginia, I put all the meat except the heads, jowls, chines, and smaller pieces, into *powdering tubs* (water-tight half-hogsheads). In Kentucky I have used large troughs, ten feet long and three or four feet wide at the top, made of the Liriodendron tulipfera, or poplar tree. These are much the most convenient for packing the meat in, and are easily caulked if they should crack so as to leak. The salting tray or box in which the meat is to be salted, piece by piece, and from which each piece, as it is salted, is to be transferred to the powdering tub or trough, must be placed just so near the trough that the man standing between can transfer the piece from one to the other easily, and without wasting the salt as they are lifted from the salting box into the trough. The salter stands on the off side of the salting box. Salt the hams first, the shoulders next, and the middlings last, which may be piled up two feet above the top of the trough or tub. The joints will thus in a short time be immersed in brine.

Measure into your salting tray four measures of salt (a peck measure I have found most convenient), and one measure of clean dry sifted ashes; mix and incorporate them well. The salter takes a ham into the tray, rubs the skin with this composition and the raw hock end, turns it over and packs the composition of salt and ashes on the fleshy side till it is at least three-quarters of an inch deep all over it, and as much on the interior lower part of the ham, which is covered with the skin, as will lay on it. The man who stands ready to transfer the pieces as they are salted takes up the piece, and deposits it carefully without displacing the composition, with the skin side down, in the bottom of the trough. Each succeeding ham is thus deposited side by side, so as to leave the least possible space unoccupied. When the bottom is all covered, see that every visible part of this layer of meat is covered with the composition of salt and ashes. Then begin another layer, every piece being covered on the upper or fleshy side three-quarters of an inch thick with the composition. When your trough is filled even full in this way with the joints, salt the middlings with salt only without the ashes, and pile them up on the joints so that the liquified salt may pass from them into the trough. Heads, jowls, back-bones, &c., receive salt only, and should not be put in the trough with the large pieces. Much slighter salting will preserve them if they are salted upon loose boards, so that the bloody brine from them can pass off. The joints and middlings are to remain in and above the trough without being rehandled, resalted, or disturbed in any way, till they are to be hung up to be smoked. If the hogs weighed not more than 150lbs., the joints need not remain longer than five weeks in the pickle; if they weighed 200, or upwards, six or seven weeks is not too long. It is better that they should stay in too long rather than too short a time. In three weeks jowls, &c., may be hung up. Taking out of pickle, and preparation for hanging up to smoke is thus performed:—Scrape off the undissolved salt (and if you had put on as much as directed, there will be a considerable quantity on all the pieces not immersed in the brine. This salt and the brine is all saved; the brine boiled down, and the dry composition given to stock, especially to hogs). Wash every piece in lukewarm water, and with a rough towel clean off salt and ashes. Put the strings in to hang up. In Virginia I used for strings white oak splits, in Kentucky hempen strings. Set the pieces up edgewise, that they may drain and dry. Every piece is then to be dipped into the *meat paint*, and hung up to smoke. The meat paint is made of warm, not hot, water and very fine ashes stirred together till they are of the consistence of thick paint. When they are dipped in this, they receive a coating which protects them from the fly, prevents dripping, and tends to lessen all external injurious influences. Hang up while the pieces are yet moist with the paint, and smoke them well. In this way I have cured from six to eight thousand pounds of bacon every year, for twenty-seven years in Virginia, and eight in Kentucky.

I use at least three bushels of salt to 1,200lbs. of meat. This may be thought extravagant, but it ensures success, and none of it is lost. For what is left is all fed to the stock, and being mixed with ashes, I believe has a tendency to promote their health more than salt alone.

Should you desire it, I will, at some future time, give you our mode of drying up lard, which is not exactly that in common use.

Very truly, your obedient servant,
JOHN LEWIS.

Llangollen, Kentucky, March 15, 1841.

MAIDSTONE FARMER'S CLUB.

[FROM THE MAIDSTONE GAZETTE.]

MONTHLY MEETING, August 26.—(C. G. Whittaker, Esq., in the chair.)—The subject for discussion was the best sorts of seed wheat for particular soils.

MR. JULL (Wortham), on being called on by the chairman to state his experience on the subject, said that he had tried several sorts, and found that the Thickset Suffolk was the best on his stiff clays. He thought that on poor lands or chalk the Cobham was the best. The Silver Drop had produced short ears and was shattery.

MR. LENEY (Wrotham), on being called on, stated that in choosing seed wheat, it was desirable to consider soil and climate. For instance, he thought that white wheat did not grow on cold lands so well as red wheat; it appeared more delicate, and was more frequently blighted. He had recently seen an instance of this on the farm of Mr. Barnes, at Staplehurst, who had very small fields, and who grew principally the Golden Drop. So well had this sort succeeded, that it was nearly as good under the oaks as in the middle of the field. In mentioning Mr. Barnes's crop, he could not refrain from making some observations on his practice of farming. He (Mr. Leney) had recently been invited, with several other practical farmers, to go down and have a day's farming with him. They had gone over about 105 aces, and had certainly not gone there prejudiced in in favour of Mr. Barnes's system. They had, however, taken particular notice of every field, and were quite convinced that Mr. Barnes's statements respecting his large growth of corn had never been exaggerated, but rather the contrary. Mr. Barnes had told them that on the previous Wednesday the same crop had been visited by fifteen farmers, who had each given his estimate of the probable yield, and that the average amounted to 104 loads from 105 acres *(cheers)*. He (Mr. Leney) believed that the neighbouring land around that farmed by Mr. Barnes would not yield three quarters per acre. The three leading principles on which Mr. Barnes farmed were these—he laid his land dry, mended it well, and ploughed it deeply *(hear, hear)*. Mr. Barnes had some of the hoary white wheat, which was not blighted ; but his success did not appear to arise so much from his choice of seed as his management. He paid a good price for his crops, but he always got good ones ; and instead of depreciating his practice, as had been done by some, he (Mr. L.) thought that Mr. Barnes deserved a piece of plate from his neighbours for the excellent example he had set (*hear, hear*).

Mr. Boucher said that the Peacock wheat was the best he had ever sown. He had grown it for many years, and fancied that his land (a forward clay) must have got tired of it, and had sown some other sorts. He had never been able to find any other sort, however, to equal it.

Mr. Shirley (Detling) said that he had never found any red wheat succeed so well, either for quantity or weight, on a chalky soil, as the Duke William. He had had it weigh 65lbs. per bushel.

Mr. Beard said that he had for the last two years grown nearly all Golden Drop, upon a clay subsoil ; he had grown more of this than of the Peacock, which he had also tried.

The Chairman asked in what his soil differed from Mr. Boucher's ?

Mr. Beard : It differs very little.

Mr. Boucher said that he had the misfortune to be a miller *(a laugh)*, and the Golden Drop was not so much liked by the millers as the Peacock.

Mr. Beard said that himself and a neighbour had sown wheat on a tare gratten ; he had sown Golden Drop, which was not blighted ; his neighbour had sown the Peacock, which was much blighted.

Mr. Boucher said that he believed generally the Peacock wheat had been found to stand blight well.

Mr. Leney said that he had forgotten to mention that Mr. Barnes mended his clover leys very much, and afterwards applied saltpetre to the wheat in March, by which means he got two crops of wheat in five years.

The Chairman said that he believed Mr. Barnes was at liberty to sell his straw. He could get as much manure for 7*l.* as 10*l.* worth of straw would make. Mr. Barnes's practice seems to show that it is bad to restrict the sale of straw too much—(*hear, hear*).

Mr. Davis expressed himself in favour of the Golden Drop for stiff and heavy lands.

Mr. Beard said it was very much sown in the Weald of Kent.

Mr. Shirley said that it was also much sown on chalk.

Mr. Jull had found it do very well for the first two or three years that he tried it.

Mr. Boucher said that it was not so coarse as when first introduced.

The Chairman asked if any gentleman present could speak to the trial of the Golden Drop on land over the hill ?

Mr. Jull said that over the hill he fancied that it had grown better than any other.

Mr. Kennard, in reference to the remark of Mr. Boucher, said that he had generally sold the Golden Drop to the millers as well as any other sort.

Mr. Beard said that perhaps it would not exactly do for the millers to admit that they liked it *(a laugh)*.

Mr. Hayes said that Mr. Mercer, the miller at Hunton, grew the Golden Drop himself.

Mr. Shirley said that upon old hoplands, or land in very good condition, the Peacock was generally sowed as a white wheat.

Mr. Viney said that he had sown three or four sorts of wheat ; for instance, he had sown the Golden Drop for two years, and also the Duke William ; but he had not found any one of them produce so much as the Peacock wheat, by a quarter per acre. With regard to changing seed, he had sown the Peacock for twenty years, and believed that he could show as good a sample of that sort of wheat as any of his neighbours who had changed their seed. His soil was generally a stiff clay.

Mr. Paine, of East Sutton, said that he had sown a piece with Golden Drop and another piece with Winchelsea, both in the same field, on a clay soil, and found that the Winchelsea produced six inches more straw, and about a sack more grain, than the other.

Mr. Leney said that he had grown four quarters per acre on a chalky soil, which must be considered a great crop for such a soil.

After some further conversation, the following resolution, having been moved by Mr. Beard and seconded by Mr. Shirley, was carried unanimously :—

" Resolved, That in the opinion of this meeting, the sorts of wheat best adapted to stiff clay soils are the Golden Drop as a red wheat, and after a fallow, or on land in good condition, the Peacock as a white wheat. That on chalky soils excellent crops have been grown of the Golden Drop and the Duke William."

HOP DRYING.

The club then proceeded to discuss the best mode of drying hops.

The Chairman asked if any member had tried the comparative advantages of the round and the square kilns, and stated his own opinion to be in favour of the round one, and said that, had he occasion to build, he should never build any other.

A member observed that much fuel was saved by the round kiln, and some general conversation took place on the subject.

Mr. Hayes said that he did not think it mattered much whether the oast was round or square, so that it had an improved chimney, and had a greater draught at the bottom, and the chimney had plenty of length.

Mr. Beard considered that the merit did not so much consist in the construction of the oast as on the merits of the hop dryer. Formerly the dryers dried directly the hops were put in, and before the " reek" had gone off, and some of the old dryers did the same now. This custom caused the lower stratum of hops in the kiln to bake together, and the steam discoloured the upper portion. He thought that with a better mode of drying a much better sample might be got, with a slight alteration of the old kilns. What they wanted was, he thought, that the fire should not be too brisk ; it could not be too slow till the " reek " was gone off, and that after that the hops could not well be hurt. The great thing appeared to be to get a good draught. Nothing was gained by lighting up the fire so early as was done by some of the old dryers, as the hops, being caked up in a mass by the steam, could not be dried any the sooner by it. Probably in nine out of ten of the old oasts, the "reek" could not get away.

Mr. STONE said that he recollected a kiln used by his father, on which the hops used to be sometimes sixteen hours in drying.

Mr. HAYES said that he thought another fault of the old dryers was that of turning the hops over as soon as the bottom layer was dry, thus spoiling them by the "reek" of those which were not dry. His custom was to begin with a slow fire, never to turn the hops at all; but if one part of the kiln dried quicker than another, to scatter the hops about.

Mr. BEARD said that his factor, Mr. Beeman, had told him that the person from whom they almost invariably had the best sample, was in the habit of making his dryer "strewsh" the hops about on the kiln whilst they were drying. He (Mr. Beard) had once tried this plan, which had given his dryer a good warming, and had thought his hops improved by it. This was of course done after the brimstone had been used, and the "reek" had gone off.

Mr. BOUCHER thought that all the air ought to pass through the fire.

Mr. SHIRLEY considered that air enough to get off the "reek" could not pass through the fire, and that it was necessary to supply it by other apertures.

After some more discussion, nine o'clock, the hour of adjournment, having arrived, and very great interest being taken in the subject of discussion, it was determined that the discussion should be adjourned till a special meeting of the club to be holden on the 9th of September.

On Thursday, Sept. 9, the adjourned discussion on the best mode of drying hops was continued. C. G. Whittaker, Esq., the president, occupied the chair, and upwards of a hundred members, comprising most of the principal and most experienced hop-growers of the district, were present.

The minutes of the last meeting having been read, some new members admitted, and other business having been transacted,

The CHAIRMAN called on Mr. T. Golding, of Hunton, the mover of the adjournment, to continue the discussion.

The Hon. Secretary said that Mr. Golding had been kind enough to place his opinions on paper, and to request him (Mr. Whiting) to read them to the society, which he had much pleasure in doing. The following is the paper which he then read :—

"Inadvertently named on the minutes as the mover of our subject for to night, I am consequently called upon by an implied understanding to introduce its discussion. I shall not take up your time by declaiming upon my unfitness for the task thus imposed upon me, as it is my wish to be understood as merely submitting certain *principles* and *propositions* bearing upon our subject—not *dogmas* of my own.

"We owe, I believe, to Mr. Read, the highly talented inventor of the stomach pump, the first attempt at bringing science to our aid. He I think it was, who first introduced the *cone*-shaped kilns, and who first taught us "the why and the wherefore" of our operations. Before his time the action of the *air* during the process seems to have been but little if at all understood. A vague idea that *heat* only was required, appears to have been universal. Small fire places, with apertures, scarcely large enough to admit the shovel,—doors and external openings, where air could be admitted, carefully closed,—the hair-cloth frequently within seven feet of the fires, two of which opposite to each other were often to be found under an extent of hair of less than half the size, where one only is now used, &c., &c. The management of these was very generally left to the *drier*, whose office was a most perplexing one. Some kilns would burn their hops in one part, while the hops in another part were scarcely warm. Hence the drier was driven to mix these heterogeneous masses in the cooling room. Again, with oast-houses admitting the air through the roof to act upon the ascending steam from the hops, while its admission was carefully excluded from below, he was at all times "the sport of the winds." Could it be expected from him to know *more than his master* of the difference between dense and rarified air? that by freely admitting the one to rush into the other, he would have counteracted many of the defects of the building in which he laboured? and, by keeping all perfectly close at the top, save the aperture through the cowl, he could bid defiance to the wind's "pressure from without." Much of this may seem irrelevant, but perhaps some gentlemen may think with me, that I could not do better than give a brief enumeration of the errors we would avoid.

"In Mr. Read's early erections he does not appear to have been aware of the advantages attending the raising the drying floor to a greater height from the fire than was generally practised; but I believe he was among the first to discover them. This raising the hops a proper distance from the fire is one of the great principles to be kept in view. Though what this "proper distance" *is*, seems still undecided; yet all agree upon its being higher than was formerly practised. Indeed, for several years there has been a progressive tendency to raise it, until we now hear of some being elevated to 16 feet from the fire! The more general practice appears to be from 10 to 12 feet. The advantages of thus raising the hops so far above the fire, are the more equal distribution of the heated air over the whole, and the consequent lessening of the danger of one portion being dried more than another, by the too near neighbourhood of the fire; in the greater quantity that may be dried upon a given space; and in the superiority of the sample in touch and colour.

"Next to this is, as has been intimated, the necessity for securing a free ingress to the external air. It is an axiom of philosophy, that "when the atmosphere is more rare in some places than it is in others, a wind or current of air is produced, which will blow from the more dense parts towards those that are rarer." Now, this principle of the philosophy of winds holds good from the "monsoons" of the eastern seas, the tornadoes of the west, down to the indraught of cold air to the heated, and, consequently, rarified, atmosphere of our oasthouses. In other words, the wind always blows from a colder to a warmer part. Hence the reason why it is found that hops generally dry better during the night than in the day. This, though well noticed, has but seldom been traced to its cause, which is simply this: the air being generally colder during the night, is more dense than in the day, consequently it rushes into the heated kilns in exact proportion to the relative temperature of the two atmospheres, of course causing a larger quantity of heated air to pass through the hops; the increased indraught to the fire fully keeping up a proportionate heat.

"I am a little too discursive, but gentlemen will remember that it is principles which I am endeavouring to elucidate, not a mere dry detail of individual practice.

"Many of our best kilns are now erected with their fire-places exposed to an open shed, with the cooling room over it. In these cases a sliding shutter is hung in front of the fire so as to regulate the supply of air to it. Where the building is fully enclosed, large holes are made through the external walls, with shutters, so as to regulate the influx of air into the building, and eventually to the fire. Some gentlemen at our last meeting appeared to be of opinion that all the air admitted to the kiln should pass through the fire, viz., should be admitted beneath the fire grate. It is not so; for although a strong under current must be insured, yet the far greater portion should pass over the fire, cool air, to be rarified during its passage.

"Those gentlemen who have been used to the old small fire-places, would have some difficulty in bringing themselves to believe that a monstrous mouth into which they could walk upright, driving a wheelbarrow before them, could ever act well. But they *do*, and better than any.

"We have circular kilns of all diameters from 10 to 20 feet, and all equally effective, providing that the other great principles are duly attended to. It does not appear that a *relative* distance from the fire is requisite between kilns of such various diameters; though probably some difference should be made.

"To those gentlemen who like myself are not so fortunate as to possess these new and improved erections, I will shortly detail my own practice with kilns of the old construction. I have generally enclosed them individually at the top so as to keep the *cone* principle in view, (but have left the kilns square, as they are found to dry equally well, though retaining the advantages of the greater space contained in a square than in a circle of given diameter). Thus every kiln does its own work, uninfluenced by conflicting currents of air from its neighbour. Not being able to raise my drying floors to the height I could wish, I counteract the too near approximation of the fires by placing a *half inch* cast iron plate, say one-third larger than the fire-place, over each, in a line with, or just above, the top of the arch, so as to diffuse the heat as equally as possible throughout the kiln. By making the opening to the fire, perhaps three times as large as heretofore, and freely admitting cold air, I have got rid of half my fires, and dry fully *one-third more* than before, and much better. It will be seen that by thus enclosing the old-fashioned kilns at the top, we approach what theoretically would appear to be the right form, viz., "two pyramids placed base to base," as (I have since found) Lance recommends in his "Hop Farmer" (p. 142); "near the apex of the one is placed the fire, and on that of the other is placed the cowl." The upright walls of the circular kilns necessarily enclose a larger space to be *heated by the fire* than the economical distribution of heat justifies, as the space between the reversed pyramid and the upright walls is unnecessarily heated.

"With regard to the quantity which can be properly dried upon a given space, there is a difference in practice from half a bushel to a bushel per square foot. Although some kilns, which combine all the advantages of the great principles we have been considering, will do the last named quantity well; yet for those wanting these advantages, the rule should rather be to underload than otherwise, as it is found that a much better sample is produced by the practice.

"My friend Mr. Beard, when addressing us at our last meeting, very properly drew our attention to the importance of beginning to dry with a slow fire. In this I fully agree, and we are borne out by the concurrent opinions of our best managers. Mr. Lance (whose experience appears to have been principally acquired in the Farnham district) says, p. 116, "In the first stage of the drying it is proper to have a small fire and a great current of air, that the first steam may pass gradually away; the heat should then be increased." I take the opportunity of observing upon the last sentence, that although the heat may "be increased," yet I believe another of our great principles is contained in a few words —dry, with as cool an air as is relatively possible. With regard to the proper temperature at certain periods of the process, it is to be regretted that we are not in possession of any satisfactory data upon this point. Perhaps some have registered their experience upon it, but the instances are isolated, and unknown to the public generally. Lance (p. 117) gives 98 to 112 deg., as "the usual heat required on the floor." He very properly reminds us that, for the economical consumption of fuel, "it should be placed in small quantities near the entrance *at first*, so that the benefit of the smoke may be obtained during combustion in its unavoidable passage over the fire." It will have been perceived that what I have said has only had reference to *open* fires with charcoal, Welsh coal, or coke, for fuel. Some give the preference to coke only, some to coal, while others, as is my practice, mix the two. Enclosed furnaces, known in the hop district as "*cockles*," though, in the opinion of some, combining certain advantages, are now very generally repudiated.

"The practice with regard to the use of sulphur varies in different districts and differing circumstances. It is I believe the object of the planter who *pockets* his hops, to bring them off of a clear, bright green colour, with but a slight tinge of yellow. He, consequently, when his hops are in the wished-for bright condition, requires but little brimstone. Whereas he who *bags*, has no objection to his hops being a little brown ere he picks them. He then brimstones pretty freely, so as to get his sample of a bright yellow, spangled with brown. The brewer, who looks for strength, chooses hops of the latter condition, as knowing them to have been ripe before they were picked, whereas he who brews pale ale looks chiefly for colour.

"The Farnham planters, according to Lance, "use little or no sulphur." The time for using the sulphur is, I believe, uniformly during the early part of the process, while the hops retain sufficient moisture to cause it to adhere to them.

"With respect to the *turning* of hops upon the kilns, which appears to be the general practice, I am inclined to the opinion that it should not be deferred so long as is frequently the case. Some, according to Mr. Beard, move them very frequently, while others do not turn them at all. Taking the matter abstractedly, we should suppose that there could be no just cause why one portion should lie waiting upon the heated haircloth, after being dried enough, while another portion, much less under the influence of the heat, was consequently but slowly drying. That those nearest the hair-cloth are soonest dried all must admit, for they "*come up*," as the driers term it, long before any visible change has taken place in those on the surface. Pockets are seldom dried so much as bags. The rule as to the dryness is, I believe, generally determined upon by the relative number of tough hops remaining, viz., those with strigs still retaining some moisture. The great brewers insist upon having their bags *home* dried, as without it they do not keep so well. The comparative elasticity of the sample, when pressed upon by the fingers, is one great criterion upon this point.

"Perhaps the nearest time that can be stated for properly drying off a kiln of hops, in average condition, is ten hours. Some load three times a day, but as this reduces the time the hops are upon the kilns to about seven hours, it is not frequently followed; too great a heat being required to bring them off in so limited a time, to say nothing of its distressing effect upon the driers, where a change of hands is not employed for the purpose. Having already trespassed upon your patience much longer than I had anticipated, I shall not take up more of your time by going into the subjects of double drying floors, the drying by metallic pipes heated with hot water, &c. The time for packing after the hops leave the kilns varies under different hands and circumstances. Some prefer them thoroughly cooled before packing, others pack them sooner. This is generally the practice with those who bag. Again, some pay much attention to sifting, while with others that plan is almost wholly laid aside. The brewers like to find *whole* hops in the sample, so that they may judge of the quality; many merchants direct to "pick well, and sift none."

"I have thus, gentlemen, as far as my very limited experience has enabled me, introduced for your consideration a few of the leading principles of our subject. There are, perhaps, some matters of importance connected with it, which, though I may be conversant with, may have escaped my recollection, while I am certain that there are many of which I am wholly ignorant. I again beg "to be understood as merely submitting certain *principles* and *propositions* as subjects for our consideration." (The applause at the conclusion of this able paper lasted several minutes.)

The following is an outline of the discussion which followed the reading of Mr. Golding's able paper on hop drying.

The CHAIRMAN said that he believed Mr. Spencer had a peculiar construction of kiln, which enabled him to dry equally well, whatever quarter the wind might be in, and asked him to describe it.

Mr. T. SPENCER said that his arrangement, which he had found to answer exceedingly well, was that of having three circular kilns, placed at equal distances from each other, and communicating with the stowage by a passage from the farthest of these kilns passing between the two nearest. On the lower floor, the spaces between the kilns, and between the kilns and the stowage, were filled up with doors four feet wide, and the opening of some two of these doors and keeping the other two shut, was found invariably to secure a strong draught of air through all the kilns, let the wind come from from quarter it might. In the upper floor, doors from the hair-cloth floor of each of the kilns opened into a passage, and the hops were then removed through sliding shutters on to the stowage. He had two cockles in each kiln, and had tried open fires, but he liked the cockles best. On the side of the cockle it was so cool that a person could stand there, but if he held his hand above he found intense heat. The hair-cloth of his kiln was about eleven feet from the ground floor, and the rafters about nineteen feet. The kilns were eighteen feet diameter, and each enabled him to dry about 500 bushels of hops in a day. The cockles were about four feet long and two and a half feet wide. In one of the kilns, in which he had a round cockle, there was never any "reek" to be seen. A common load for this kiln was from twenty to twenty-five pokes. He had tried as many at one time as twenty-eight pokes in ten hours. He (Mr. S.) had not gained a first prize for hops, because for the last year or two his hops had been diseased; but the factor to whom they had been sent had at once stated that they were excellently dried, and that he (Mr. S.) must have a very good kiln. Mr. Beeman had also seen them, and at once also said that they had been admirably managed. The round cockle was not above seven feet from the hair. The fuel he burned was common house coal.

The CHAIRMAN expressed his conviction that the superiority of the sample depended much more than was generally supposed on the picking.

Mr. WHITING asked whether in the Farnham district it was not usual to pick the hops in two classes.

Mr. GOLDING said that it was, and that the pickers always had a basket beside them, into which they put the small hops, instead of mixing them with the others.

Mr. ELVEY said that he did not believe that Kent would fall short of the Farnham district, if they were to take as much pains. Mr. Miller had procured sets from Farnham, but gave them up in a few years, as he found that they were in no respect superior to the Kentish hops. Their excellent chairman had spoken of the importance of improved oasts, but he was a landlord, whilst most of those present were tenants. One of the great advantages of publishing their proceedings would, he doubted not, be, that of showing the landlords on what principle oasts ought to be constructed *(hear, hear)*.

The CHAIRMAN said that he was sure that the landlords would be ready to lend the tenants every assistance when the proper principles had been made known to them by the club, but in improving oasts, they were frequently asked to do things that were at direct issue with common sense. Having had the process of hop-drying so ably explained as it had been in Mr. Golding's paper, he was sure that the landlords would feel a pleasure in making what improvements were required *(cheers)*.

Mr. ELVEY said that he agreed with Mr. Spencer in favour of cockles, and believed that the hops dried by them were worth 5s. per cwt. more than those dried by open kilns; and were he to build a kiln, he should certainly adopt cockles. He was also in favour of sifting very much, and of even breaking those hops which were not broken in picking.

Mr. MARSHALL said that he had been in the habit of drying with open kilns. He had had both cockles and open kilns, and had altered the cockles to open kilns, being convinced of their superiority, after having tried their comparative effects. He had since had several more oasts built at Wateringbury with open kilns, and the result had confirmed him in favour of them. They had only one aperture for admitting the air. With reference to Mr. Golding's observation, that it was best to have the lower part of the kiln funnel-shaped, he thought it was preferable when left as a square chamber for the heated air, for he conceived the larger the body of heated air in the lower chamber, the sooner would the current of air drive off the "reek." He was of opinion with Mr. Whittaker, that in picking hops they did not in this district pay half the attention which was required. Before he (Mr. M.) came into West Kent, about ten years since, he had had the management of about twenty acres of hops, where they were picked so well that they required no sifting, although they were generally passed through the sieve. He thought that if the golding hop was picked as it ought to be, it required no sifting. The grape, however, was in appearance a coarser and uglier hop, and was generally broken by those who grew it. The hair of their kilns was about nine feet from the fire, which was about two feet over at the top, and the kiln was eighteen or twenty feet in diameter. He was of opinion, with Mr. Beard and Mr. Golding, that when the hops were in a wet state, it required great caution in increasing the fire, or great mischief might be done within the first hour. He knew that great difference of opinion existed respecting turning the hops. Some persons turned them every hour, and it was said to be beneficial; but as his (Mr. M.'s) practice was to let them lie till they were nearly dry, and then turn them completely over, he could not speak to that point. When he turned them he generally gave them a little more brimstone, and allowed them to remain in the kiln for about an hour afterwards. He believed that Mr. Hammond, of Horsemonden, who was a very good manager, generally turned them every hour.

Mr. Spencer said that he thought the comparative advantages of cockles and open fires depended in a great measure on the situation of the oast.

Mr. Whiting, (at the request of Mr. Golding,) stated that he had not in his paper advocated funnel-shape kilns, on his own experience, but had mentioned their supposed advantages as referring to the question of economy. Mr. W. then said that it had appeared to him on reading Mr. Golding's valuable paper, that the reason there given was a fallacious one, inasmuch as it seemed to him that the greater the body of heated air in the kiln, the greater the chance of forcing a strong current through the hops. The operation of drying hops, from all he could learn, depended on two conditions of the current of air which was brought in contact with them, namely, heat and dryness. In the old kilns, as observed by Mr. Golding, heat alone was relied on, but heat was not enough, for the heated air in the kiln could only absorb a certain quantity of the moisture of the hops before it became saturated. No addition of heat would cause it afterwards to absorb more moisture, but increase of heat would convert it into steam, and would make it steam the hops. In this state of things the dryer was everlastingly perplexed, and complaining that he could not "get the reek off," and the hops were irretrievably damaged. What had been contended for by Mr. Beard, Mr. Hayes, and Mr. Golding, was, that a body of dry atmospheric air should be brought in, in sufficient quantity to absorb the "reek" and carry it off. The members were well aware that the atmospheric air, although very cold might still be very dry, and he (Mr. W.) believed that if by any mechanical means a constant current of atmospheric air could be passed through the hops in the kilns, they might be dried, although of course, more slowly, without heated air at all. Then came the question, how was the current of dry air to be made to pass through the kiln? This was effected by the simplest means. It was in the nature of heated air to ascend, it being lighter than atmospheric air in its usual state. It was in the nature of ordinary atmospheric air to rush into the space from which heated air had ascended. As soon as the fire had been lit in a properly constructed kiln, the air contained in the kiln arose as it became heated, the other air rushed in, to supply its place; this in turn arose, and thus a powerful draught of air was sent through the kiln by the very simple process of lighting a small fire. It was most important that the principles laid down in Mr. Golding's paper, namely, that a large body of dry air was as necessary as a small body of heated air, should be fully impressed on all persons who had anything to do with the drying of hops. This principle having been established—one step, and, probably, the most important step, had been gained—the best form of construction to give effect to the principles appeared to him to be a secondary consideration, and would follow as a matter of course.

Mr. Barnes then addressed the meeting in nearly the following terms:—"Being so small a grower of hops, I could not intrude myself upon this meeting, were it not that on other occasions I had frequently requested my fellow members to make some remarks on subjects they considered themselves less acquainted with than others; and that I may not be wanting in doing that I requested them to do, with your permission, Mr. Chairman, I will make a few remarks based more upon theoretical conclusions than practical, however I might perhaps claim a little of the practical, having some years ago attended to the drying of some hops myself. At that time the true principle of hop drying was less understood than at present, and it would be presumption in me to exhibit the experience of that period against the improvements of the present, and in the presence of so many gentlemen of great practical knowledge, aided by all the advantages of these improvements. The construction of oasthouses has, like everything else in agriculture, undergone very great improvements. At the period alluded to, it seems the impression existed that the nearer the hair was to the fire the better, the dryers believing that the heat of the fire coming as near as possible to the hops, like a wet cloth hung before a fire to dry, the sooner would they be dried; hence small oasthouses were erected, many of them so built that unless the weather, winds, &c., were favourable, drying was impossible: in others, great danger might be apprehended, from the fire being so near to the hops, of their being scalded, a circumstance that did at times occur. It would often be found that many openings were left to admit air, and in many cases those holes were above the hair; attempts were also made to get off the damp from the hops above when no air was admitted below. These old, inconvenient, and unsuitable buildings have, in many cases, happily given place to others, alike creditable to the parties directing and those executing their erections. The best of these I have thought were the circular kilns, inasmuch as the fire would be more likely to heat all places alike in a circle than in a square. The tendency of heat is to radiate, and in a circle there are no corners to fill. I do not think it a matter of any consequence whether the bottom of the circular kiln is lessened by what is sometimes called a circle within a circle or not, as the bottom without it will not heat to any extent, the tendency of heated air being upward, for this obvious reason, it is lighter than air in its natural state, and like a lighter substance than water being immersed in that fluid, will seek to arise. When the heated air ascends, colder and heavier rushes to supply its place, and thus a current of air is produced; the heating of this current as it passes through the hops, and drying them by that means, is the proper and best means of accomplishing the object. In the kiln no air should be admitted but that passing through the opening for the fire. Everything above the hair should be most carefully closed, and the top part be brought to a point like a tunnel inverted to the cowl, which should be of sufficient size to allow the reek or damp freely to escape. The distance of the fire from the hair should be as far as practicable; no danger exists of its being too far, if sufficient heat can be obtained to accomplish the object, and if heat is produced below, it most certainly will go up to the hops. I do not agree with Mr. Golding's statement as to the amount of heat required, as that stated by Mr. Lance, and quoted by Mr. Golding, is not greater than the heat of our Midsummer days; indeed it is very difficult to determine the quantity of heat required, as so much depends on the state of the hops, the quantity put on, and if at the beginning or ending of hopping. It would be interesting if some of our members would place a thermometer in their oast, and carefully note the degree of heat made use of throughout the hop season, and report to the club. Large hops should be carefully sifted and broken. My practice is, not to sift them immediately they come off the hair, but to throw them in a round lump on the cooling-room floor for six or eight hours before doing so; but if I was a grower of golding hops, I would endeavour to retain them in an unbroken state, and not sift them at all. This would render it necessary that the picking should be carefully attended to, and no doubt exists in my mind but that this important part of the process is too much disregarded. At a very trifling increase of cost per cwt. this object might be accomplished. Some difference of opinion appears to exist in the meeting as to the moving the hops on the hair. My opinion and practice is, to get the fire through them a little first, and afterwards to turn them, and if occasion requires, from the hops being wet, &c., to "strench" them once or twice, always beginning to dry with a small fire, and going on to increase. I think with Mr. Hards that the distance required for the hair to be from the fire does not depend upon the size of the kiln, all things being in proportion. I think with Mr. Elvy that cockles are preferable to open fires, as in the use of them no fire or gas passes through the hops; when in open fires, coke, Welch coal, or charcoal is used, a considerable quantity of gaseous matter is emitted, and must necessarily pass through the hops, carrying with it a portion of their best properties, and consequently lightening their weight and lessening their quality, an effect that I believe would always follow the passing of heated gas through any vegetable in a green state. I should much like for fifty bushels of green hops to be put on a cockle kiln, and fifty bushels exactly similar put on a kiln with open fire, both being weighed on being put on, and both dried alike, and afterwards weighed. I think, from the circumstance stated, the cockle-dried hops would be heaviest. I feel obliged by the kind attention paid to these imperfect remarks, and beg to sit down *(cheers)*.

Mr. TOMPSON, of Loose, said that Mr. Lance must, he thought, have been mistaken in the degree of heat required. He had a thermometer in his kiln, and had observed the heat generally to be about 150 deg., at the distance of about four feet from the hair.

Mr. ELVY said that in exchanging the hair-cloths he had sometimes found them burnt in the middle.

Mr. BARNES said that a friend of his had a circular plate suspended over the fire, but the hair-cloth had been burned in a circle corresponding with the edge of it.*

After some further conversation, the following resolution was moved by Mr. Golding, seconded by Mr. Barnes, and passed unanimously:—

"That it is the opinion of this meeting that there are a few leading principles which are of the first importance in hop drying, such as a sufficient elevation of the drying floor from the fire, which ought certainly not to be less than ten feet; the introduction of a strong current of atmospheric air into the *kiln*; the thorough closing of the roof, save the aperture through the cowl; a slow fire during the early part of the process; and the early and perhaps frequent turning of the hops during drying. The amount of heat which is required does not appear to this meeting to have been yet ascertained with sufficient accuracy to afford data to act upon, but the members are requested to try experiments on this point during the present hopping, and to give to the Society the benefit of their experience."

It was also determined that at the next meeting (Sept. 30th) the subject of discussion should be, 1st, The best mode of preparing seed wheat; 2ndly, The best mode of sowing it.

EXTRAORDINARY CROPS FROM CLAY LANDS.—It was stated at the meeting of the Farmer's Club, on the 26th ultimo, by Mr. Davis, that Mr. W. Barnes, of Staplehurst, would, if his crop this year realised the estimated growth of seven quarters of wheat per acre, have grown, from the same piece of stiff clay land, the very large quantity of twenty quarters of wheat per acre in three crops, within four years. We have since ascertained that the mode of tillage adopted has been the following:—

		Bushels.
1838	Wheat, per acre..........	53
1839	Wheat, with seed, dressed with 3 cwt. saltpetre.........................	51
1840	Clover, three cuttings, well dunged....	
1841	Wheat, dressed with 2 cwt. nitrate of soda, estimated at.................	56
		8)160
		Qrs. 20

Upwards of fifty agriculturists, from far and near, have been this season to inspect the crops of Mr. Barnes, which have been estimated to yield nearly five quarters per acre on an average.

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* It should be known that a plate of sheet iron, suspended perhaps half way between the fire and the hair, is very likely to have this effect, and is very different in its operation from a *cast* iron plate, half-inch thick, placed immediately over the fire, so as to cause the heat to radiate more effectually on its first leaving the furnace, as is the case with Mr. Golding's.—ED.

WARMINSTER FARMER'S CLUB.

EXTRACT FROM PROCEEDINGS AT THE LATE MEETING.

Mr. Bleeck stated that a friend of his had discovered a manure of a most fertilizing power, which could be obtained in any quantity at a moderate expense. As a proof of the virtue of this manure, his friend had, about four years ago, taken in hand a piece of land on Winsley-hill, which was then in barley. After the crop had been taken off, he manured it, and laid it down to wheat, and the first year it produced five sacks an acre. It was manured the second year, and again laid down for wheat; and that year it produced five and a half sacks an acre. Last year it was again manured, and in April sown with Talavera wheat, which was reaped in August, averaging six and a half sacks to the acre: so that it had grown three successive crops of wheat, and each year the crop had increased in quantity. The fourth crop was now on the ground.—It should be added, that it was last sown under very unfavourable circumstances. Mr. Bleeck then submitted a sample of the Talavera wheat which had been grown, and which, we understand, appeared in good condition. Hearing of the great power of this manure, two experienced and practical farmers—Mr. George Webb Hall and Mr. Chandler—had been to examine the crop then on the ground, and the observation made was, there could be no doubt that the manure must be of giant power to produce such wheat. There were several gentlemen present who had been to the spot; and it was well known that under any ordinary power the land, which was of a poor thin soil, could not produce more than four sacks to the acre. Every one then must admit, that if such wheat could be produced, and in such quantities, the manure must be of a very fertilizing description. It struck him that there were two great points to be ascertained, viz., the capability of supply, and the expense. He had questioned his friend closely on these points; and he had assured him, that it could be supplied in unlimited quantities—that it was easy of carriage, and that it would not cost more than fifteen shillings an acre. For himself he would say, that he never saw finer wheat than this piece of land produced, after being subjected to the manure; and he never in his life heard of manure possessing such gigantic properties. *(Hear, hear.)* He assured them that his friend was no quack: he had no desire to obtain an immense profit at the public expense. He wanted nothing but protection, and he would immediately place the secret before the public. If the Government should be convinced of its great efficacy, it might be made a national affair. His friend was a calculating man, and not likely to come to erroneous conclusions; and he was firmly convinced that by the application of this manure, the land would be enabled to bring forth double its present produce.

Mr. Goodman.—With their permission he would now say a word or two on the subject which had been introduced to their notice by Mr. Bleeck. A gentleman present (Mr. Chandler), on whose judgment they could all rely, had accompanied him to view the piece of wheat alluded to. It was drilled at twenty-one inches apart, and the first observation he (Mr. Goodman) made was, that he had known wheat drilled at wide distances on the same land for sixteen successive years *without any manure*, yielding on an average, as he was informed, from seven to eight sacks per acre: the principle relied on in favour of that system, being the *frequent hoeings* the land was subjected to in the course of the summer. Now, if the land planted to wheat by Mr. Daniell had undergone this process of hoeing, there might have been some reason for attributing the appearance of the crop to that circumstance, rather than to the application of his newly-discovered manure; but such was not the fact. Mr. Daniell was no farmer, as the state of the land proved, for it was encumbered with weeds, and those too of very strong growth. He did not say this to detract from the merit of the discovery, or in disparagement of the fertilizing qualities of the manure; but, on the contrary, in support of his opinion in favour of its powers, for without its application the crop could not under such management have arrived at its present state. Mr. Goodman then detailed the mode of cultivation adopted previous to depositing the seed, as explained by Mr. Daniell. After the last year's wheat crop was harvested, the stubble was ploughed up, and remained in fallow for some time—the land was then barrowed and (as it is technically called) bouted. This bouting was performed with a plough having two turn furrows, which throws the land up in ridges twenty-one inches apart; on the top of the ridges the seed was drilled, and after the seed was deposited, the manure was scattered along the drills, which were then covered with earth, and woollen flocks. On observing the flocks, Mr. Daniell was asked why they were used? and his reply was, simply to cover up the manure to prevent persons from discovering his secret. He did not consider them to possess any fertilizing power. They had also seen about two acres of barley, sown broadcast, to which the manure had been applied; and its effect, judging by comparison from another field close adjoining, was most apparent and decided. The land was very shallow, and not more than four inches deep in soil before they came to the stone. He was particularly struck with the size of the straw and the length of the ear, but this might arise from the distance between the drills. It should be borne in mind that Mr. Daniell was no agriculturist; he knew little of farming, but by some chemical research he had hit upon this experiment; it was therefore the more necessary that it should be closely scrutinized, and every fact relating to its application made known before being generally adopted. *(Hear, hear.)*

LECTURE ON WHEAT.

On Tuesday evening, September 14, Mr. W. B. Webster, surgeon, of Ipswich, delivered a highly interesting lecture on wheat, at the meeting of the Farmers' Club, held at the Agricultural Hall, in the Butter Market. Mr. Charles Poppy, of Witnesham, took the chair. The lecture-room was well filled. The discourse comprised the ancient history of wheat, as far as it can be known—the structure of the straw and ear—the progress to maturity—fleet or deep planting—steeping liquids—comparative productiveness, &c. The room was hung with drawings of the wheat plant in its various stages of maturity, taken by Mr. Biskoff, for the purpose. The following portions from the lecture are calculated to convey a good idea of the information conveyed:—

The Corn Laws.—Every subject has a political bearing, and the question of the corn laws is of paramount importance. Napoleon evinced a peculiar solicitude at all times that Paris should be supplied with cheap bread, and it is said that he paid as much attention to the price of bread as he did to the state of his army. I believe we do not produce on an average of seasons the quantity required for the support of our population. But I am convinced that the soil is adequate to that effect; and it remains entirely with the agriculturists whether they will supply the British people or whether corn is to be imported from abroad. Bread we must have, and at a fair and moderate price. The agriculturists have effected great and important benefits; they are still making great efforts, in reclaiming vast tracts from the sea, as in the Great Victoria Level, draining the bogs and the fens by the erection of steam-mills; they are using large quantities of bone dust and animal manure to the poorer lands; they are underdraining the cold wet soils, thus giving immense employment to the tile-makers. The land is cultivated as a garden, and they obtain a quarter of wheat more per acre than formerly, and that of a much cleaner and better quality. Let it be recollected in the agitation of this great question, that no one article in nature requires so much labour or so much care from beginning to end as wheat—all other substances are more readily available, as they come to us from the hand of nature—from steeping and drilling of the seed, the assiduous care during its growth, to the joyous scene of harvesting.

Growth of wheat to be increased.—It is evident, positively evident, that the superfices or surface of an acre of land can hold half a million plants, if six inches apart. It is evident from inspection that a single ear can yield fifty seeds of wheat, and fifty seeds of any common wheat will weigh thirty grains. The half million of plants will give thirteen coombs. And, lastly, it appears that the soil can and does sustain, or readily produce from a single acre, a greater quantity of good dry potato meal or flour, such as I now show you. There are 38,000,000 acres in England and Wales. And in the United Kingdom of Great Britain and Ireland there are 5,000,000 acres appropriated to wheat every year; and if we grow ten coombs per acre, we have ample supply for all our population; and if we grow twelve coombs per acre, we have a surplus for our increasing population for half a century to come. It is an idle bug-bear, and lazy fallacy to suppose for one moment that we cannot produce sufficient food for our people. It is to be done by skill and industry, and assuredly will have to be done. Agricultural gardening will achieve wonders. And who is there that can rationally object to this statement? For we have only taken the obvious palpable facts presented to us by nature herself. We have only had recourse to numbers, weight, and measure. We neither overstrained nor perverted the facts. And many instances of practical results there are to corroborate our views. Mr. Allen, in this neighbourhood, has produced twelve coombs—Colonel Le Couteur, fourteen coombs. Various parts of Essex, Kent, and Somersetshire, have repeatedly produced again and again fourteen coombs. Why, the agricultural report for August, of this very year, in the *Mark Lane Express*, 6th of September, says, the returns of the crop from several places give from seven to eight quarters per acre, and some as low as only two. Hence we have the fact admitted on all sides, by most stanch practical men, that an acre does produce seven or eight quarters, or sixteen coombs. By a fair demonstration I have endeavoured to show that every acre ought to grow six or seven quarters. But what a sad discrepancy is exhibited between theory and practice, and how great is the falling off! The theory and the facts are quite in keeping with each other; they are incontrovertible. Then the fault is somewhere in the practice, and the deficiency is chargeable in a great degree to the agriculturist. What with all the aid of valuable machinery—with ready means of transport of every article—with all our skill in science and in arts, shall we let the most noble, the most enlightened, and the most pure pursuit of man be in the rear of every other? No, I would rather see it in its native dignity take precedence of all, and lead the way in freedom, diffusing happiness and joy, and smiling plenty all around the land. Our national resources are almost infinite, and by the superabundant gifts of Providence we seemed destined to be a great and glorious nation. Else why such prodigious store of coals and iron, and limestone, not only stored within the bowels of the earth, but spread over the land? We have the means of an inexhaustible supply of soda, and a multitude of agents of the greatest value and importance. We seem to stand pre-eminent to all the world. We have the greatest mechanical means, and we have all that chemical agency can require; and with mechanics and chemistry we lay the whole of nature under contribution; we have the key of all her treasures. It would be painful, invidious, and discreditable to suppose, for one moment, that British agriculture cannot vie with British manufactures, and I do believe that the skill and science of our countrymen will achieve a conquest over every obstacle, and that in the cultivation of the soil we shall excel every nation of the earth, and disdain a protection which the weak and oppressed only require.

Transplanting wheat.—There are many practical points respecting the tillering of wheat which might be adverted to with advantage, but perhaps as my audience may feel no interest therein, I will only advert to a circumstance arising from the property of tillering, which is the transplanting of wheat, a point in some cases too little attended to, as in the spring season when some of the plants have failed, the deficiency may be supplied by putting in young shoots from the more abundant plants, and thus a better crop ensued, and more judicious perhaps than ploughing up a scanty field or allowing it to remain with half a plant. The transplanting of wheat has been tried on a large scale very unsuccessfully by Mr. Lodge, a farmer of Blakenham, who sowed an acre of Wheat at Michaelmas by the common mode of broad cast. Early in spring he employed an amazing number of women and children to transplant it upon ten acres; he tried it successively for four years, and at last abandoned it. He never got more than four or five coombs per acre.

Horticultural farmers.—Growers of seed-wheat, who, by paying such attention to the subject, may very much indeed increase the productions of the kingdom—who, by attending to circumstances too minute for the great farmer, will produce a superior article. For nothing has been of more advantage in manufactures than division of labour, and why may not the same be available in agriculture? Surely no less skill and attention is required; and excellence can only be obtained by it. From the very little I have seen and the very little I know of wheat, I am fully convinced, by careful culture and horticultural attention, much—much indeed may be done with it so as to excite the greatest astonishment, and to be of the greatest national utility.

A remarkably fine specimen of wheat is grown in the immediate vicinity of Ipswich, by Mr. Allen, of Whitton, most favourably known to the public as an excellent and experienced horticulturist, and especially famed for his gigantic cucumbers of extremely rapid grown.

Mr. Allen has grown one acre of this wheat, producing twelve coombs per acre, some of which he has sold at the rate of five guineas per coomb.

I was favoured with some very good Golden Drop wheat, which has yielded nine coombs per acre on 'the large scale this year upon moderate land. My much-esteemed and amiable friend, Charles Poppy, gave it me, and a very clean, elegant specimen it is ; and the quantity obtained per acre is a guarantee that it is a good kind. I selected a very good ear from Mr. Poppy's Golden Drop, and took one of Mr. Allen's indiscriminately :—

Allen's—12 coombs per acre.	grs.	*Poppy's—9 coombs per acre.*	grs.
Weight of ear	72	Weight of ear	43
Containing 82 seeds .	58	Containing 47 seeds .	33
Chaff and rachis	14	Chaff and rachis....	10
The chaff is $\frac{1}{5}$ of the whole		The chaff is $\frac{1}{4}$ of the whole	

Bing 5 per cent. more chaff in Mr. Poppy's.

I took an ear of wheat from another sample of white wheat :—

The ear weighed	39	grains.
Containing 38 seeds.	30	—
Chaff and rachis........	9	—

From this mechanical analysis the relative value of the two wheats is very apparent; for the larger wheat produces much less chaff in proportion to the quantity of grain, and moreover, a large sized wheat will afford much less bran than a very small grained wheat; for every one knows that a peck of small apples or small potatoes are very unprofitable, in consequence of the quantity of peel. Some of the inferior wheats yield as much bran as flour. The preponderance in favour of Allen's wheat is very great, and it is evident that where little care is exercised in the selection of seed, that chaff and straw must be the principal product, and the individual sustains a loss and inflicts a public injury by a diminished supply.

Wheat Flour.—What is wheaten flour—wherein does its excellence consist—and why is it so superior to all other materials in the making of bread ? We shall not attempt to enter into any minute chemical analysis ; we shall give a popular view of its constituent principles ; which are, starch, amylaceæ, and gluten. These three materials constitute wheaten flour. If a little wheaten flour is very carefully kneaded and washed by a gentle stream of water over a vessel, the gluten remains behind, and the starch settles at the bottom of the vessel ; and by careful decantation after two days the lighter starch may be separated from the denser and whiter material at the bottom. So that three substances may be readily procured, and are those now presented for inspection. The flour being separated into its constituent principles, 18lbs. of good *wheaten flour* should produce 26lbs. of good beautiful light white bread. But the inferior kind of flour produces only from 20 to 22 lbs. We often hear of instructing the people in political knowledge—how many better sorts of knowledge there are I need not say, and among them I would rank a knowledge of the articles which they buy, which might be made both pleasing, elegant, and instructive, as well as practically beneficial : a knowledge of themselves and their own immediate concerns. Wheat flour varies much in its composition, according to its quality. 1 lb. flour has generally yielded me—

Gluten	3 oz.
High Starch	$7\frac{1}{2}$ oz.
Amylacœ, or Low Starch ..	4 oz.
Bran, &c................	$1\frac{1}{2}$ oz.
	16 oz. 1 lb.

Gluten—Is the brown dark-coloured substance, very elastic, and capable of being drawn out to a very considerable extent. It has little or no taste ; not soluble either in cold or boiling water ; but contracts into a hard sinew-like substance. It is not sticky or gummy. It burns with a bright white flame, and something of the odour of a burnt feather, and it yields ammonia, which approximates it greatly to the nature of animal substance. It is from the presence of Gluten in flour that it is so apt to spoil by age, for starch will keep unimpaired for many years. Gluten is supposed to be the fermentative principle ; it gives tenacity and strength to the bread, and great part of its nutritive quality. Gluten, I am inclined to think, is quite as nutritive as isinglass or gelatine, and in many cases far better adapted as an article of diet. Corn is now bought principally with regard to its whiteness and weight per bushel, but a little knowledge of the relative value and importance of the different articles of food would be of great service to the poorer classes, so as to enable them to lay out their money to the best advantage and with judgment. There is some flour nearly 8d. per stone of less value than others ; here knowledge would prove decidedly beneficial. I merely refer to very plain simple facts. It is said that good household bread is much more satisfying, and stays longer than the light sponge of the elegant white bread of bakers. In order to see what effect gluten had in bread, I had two loaves made from the same flour, adding to one loaf an additional portion of gluten, and it produced a coarser browner bread, but extremely good. Mr. Charles Poppy recollects a man who farmed the poor some years ago having purchased some spring wheat, and fed them upon the bread made therefrom, and he was surprised at the satisfying nature of the bread, and he declared that they eat much less of it than of the usual sort. Sir H. Davy has published a statement that spring wheat contains a much larger portion of gluten than Lammas wheat. But, however, without laying much stress upon this, it is an open question of very considerable national importance to ascertain by correct chemical analysis the respective qualities of the different wheats, and the proportions of gluten they contain, because if we can procure the gluten, we have a never-failing and an abundant source of fine starch in the potato of which crop we are secure perhaps and in larger quantity. It is to real nutriment we are to look. We should naturally expect that wheats could differ as much as other substances in nature —potatoes, for instance, are of very various qualities —some very floury, and some poor waxy, watery bulbs. In like manner, wheats vary very much in quality and in appearance ; and we are informed by Sir H. Davy, and others, that some wheats contain nearly half as much gluten again as others. Now if gluten is the distinguished characteristic of wheaten flour—and from which it draws the chief portion of its excellence—must not the nutritious, and useful quality of flour depend, in a great degree, upon the quantity of gluten the flour contains ? Undoubtedly. And seeing very evidently that gluten is a dark brown substance, and wheat starch very white, are we not sacrificing quality to appearances very much, when we covet so very white a loaf, and prefer at all times the whitest wheat, to that having the least colour? This taste of the public is taken proper advantage of, and potatoes are introduced largely by London bakers to fabricate a light delicately-white bread. And, as we have before stated, we may almost have anything we desire from the kind and indulgent hand of nature; we can have white Talavera wheat-flour white as snow, and of course proportionably deficient in the dark material, the gluten. We can have hard flinty grain, the coarse clog wheats, and the hard wheats of Barbary, and many parts of the South Europe. And are these hard coarse grains of no value? Oh yes; they abound in gluten more particularly, they make a coarse hard flour. But may not this property be turned to a great advantage, and may not this abundance of gluten in these hard coarse wheats be rendered available to the most important purposes? Assuredly it may. For 1 bushel of this hard grain will go as far in the manufacture of bread as 1½ bushel of the white wheats. Since the hard grain has more gluten in it than is required by our fancy and our taste, and since gluten is the great material, the strength and the basis of the bread, the bending and the fermenting principle, we can easily supply the white starchy matter of potatoes in any required quantity to make white and elegant bread. What an immense saving then would be effected if such is the case! Because a bushel of clog hard wheat will make as much bread as 1½ bushel of Talavera wheat, and as white as required when improved by the addition of a large quantity of potatoes; and the one bread shall be as nutritive and good, and as white as the other. That something of this kind is the case, may be inferred from the circumstance of clog wheats being most in demand in wet harvests, when the gluten of wheat is destroyed, as in 1816, and the flour rendered soft, and sweetish, and more fermentable. Then the clog wheats are used to improve the soft and damaged corn, by imparting the required portion of gluten; and, moreover, the clog wheats are most in demand in the London markets, because they give strength to the loaf, as it is called, and whiteness they obtain from potatoes and other means.

The lecture was well received. At the close several members of the club expressed themselves highly satisfied, and a vote of thanks was passed unanimously to Mr. Webster, on the motion of F. Alexander, Esq., seconded by Mr. Allan Ransome. Mr. Webster then addressed a few words of thanks to the meeting, which separated immediately afterwards.

AGRICULTURAL IMPROVEMENTS AT MULMUSSOG.

On Thursday, August 19, a most interesting meeting took place on the Mulmussog estate, in the parish of Innesteen, County Donegal, and about five miles distant from Killybegs, in consequence of invitations to the gentlemen, clergy, and principal farmers of the surrounding country, issued by Wm. B. Harcourt, of St. Leonards, County Berks, Esq., the proprietor of the estate, Ralph Deane, Esq., (a large landed proprietor in England,) the lessee of Mr. Harcourt, and Mr. Houghton, of Bloomhall, Sunninghall, Berks, the agricultural agent of Mr. Deane upon his English estates and leasehold property in Ireland. The object of these gentlemen in convening the meeting was to prove, by the results of their own experiments on Mulmussog, the practicability of reclaiming, by a proper application of skill and capital, much of that bog land in Ireland which is now in a state of nature, and bringing it to a degree of fertility, equal to that of the best land in England; and this at an expense which will be far more than repaid by the profit attendant upon it, while the condition of the people will, through the more extended employment given to them, be greatly ameliorated.

The lands of Mulmussog, which extend to 860 English acres, were, until they came under Mr. Houghton's management, three years ago, almost a perfect waste. True, there were seven tenants upon them, who paid in all 12*l.* of rent, which was sufficiently high, if viewed relatively, not to the inert capabilities of the soil, but to its actual produce. Small patches of it might have been *scratched* by them here and there, and grain and potatoes raised from them in the most inartificial measure; but all the rest was a scene of the most unmitigated barrenness, its choicest covering being rushes and the coarsest heaths, from which a few diminutive cattle contrived to pick a miserable subsistence. The whole estate was without shelter, and without a fence, and it was unpenetrated by a single road, so that its occupants, when conveying their scanty produce to market, had to carry it on their backs, often wading knee-deep in mud, and always through streams, until they got far beyond its limits. We need scarcely add to this description that one and all of the tenants were in a state of the most abject penury. On first coming to this country, Mr. Houghton discovered, very much to his satisfaction, that the greatest part of the surface soil consisted of black bog, which is the most improveable of all the bogs; and the first step in his progress was to take the whole into his own hands, he paying the tenants for what is termed the *good-will* of the land, instead of ejecting them, which arrangement was effected in the most amicable spirit on both sides. He next proceeded to construct first-rate roads by the most expedient lines, and to have the lands divided into large fields by substantial fences planted with quicks, which have thriven surprisingly, and the whole intersected by close drains; but not the least of his operations in connection with the soil was the cutting of a channel through a solid rock, by which he drew off the water of a lough nearly in the centre of the estate, thereby recovering much valuable land, and securing the crops on the adjacent ground against the blighting effects of evaporation. On this work there were upwards of 800 men employed; but it is only justice to the peasantry to state that a very large proportion of them volunteered their services and rendered them gratuitously. One of the great results of what Mr. Houghton has done during these three years, all of them particularly unfavourable to field operations, is, that he has now 100 acres under oats, which are at least equal to the very best we saw between this city and their locality, 20 under potatoes, also an excellent crop, and a small portion under clover, which was sown late by way of experiment, but promises remarkably well. Mr. Houghton expects to have the whole estate under the plough in the course of a very short period; and, from the energy with which he conducts his operations, we have no doubt that his expectations will be realised. He stated to us that he never had the smallest fear as to the adaptation of both soil and climate, though much of the ground is considerably elevated, to the production of cereal crops, but that, had he judged erroneously in that respect, he could have turned the land to as good account by producing green crops from it for dairy purposes, and the fattening of stock. While reclaiming the soil, Mr. Houghton was not inattentive to the requisite buildings. He has erected an elegant and commodious dwelling-house, with a walled garden attached, a large cow-house and stables, a piggery, and a most capacious and substantial barn, with all suitable appurtenances, and a dairy, the most complete and best kept we have yet seen, where we observed a quantity of the richest butter packed in firkins for the English market. In addition, he has erected over the estate a number of slated and commodious cottages for the use of the work people, from whom he exacts the strictest observance of cleanliness. To each is attached a garden and piggery, a patch of potato ground, and cow's grass. The whole are occupied rent-free; and, besides, each occupant receives six shillings of weekly wages. We need not remark how incomparably superior in circumstances those persons are to the former possessors of the soil, and how many more families are supported in comfort out of it than was the case formerly, proving the absurdity of the idea that the population of Ireland is out of proportion to its natural resources. We must not omit to add that there is upon the estate a National School, which was erected at the joint expense of Mr. Harcourt and Mr. Murray, of Broughton, and is conducted by a very well qualified master. There were in it at the time of our visit upwards of seventy scholars, whose cleanly and cheerful appearance gratified us extremely. Very few of them, on being adopted into the school, understood English; but, by being taught to read it, they, with their characteristic cleverness, soon came to understand and make use of it.

The company assembled inspected the different crops on the estate, and also the office houses, and were most agreeably surprised by the vast and beneficial change which had been effected. They were equally gratified with an inspection of a stock of cows, native and Durham, and their calves—chiefly a cross between these two kinds, and pronounced by very competent judges to be the best in the country—the pigs of the Berkshire breed, and the horses mostly Suffolk.

THE DINNER.

After what may be called the regular business of the day was over, the company sat down to a plentiful and elegant dinner in the house of Mulmussog, Mr. Deane, the lessee of the property, occupying the chair, and Mr. Houghton acting as croupier.

After the toasts of "The Queen," "Prince Albert, and the rest of the royal family," and "The Army and Navy," had been given,

The Chairman gave "The Clergy,"

The Rev. Mr. Drummond responded to the toast.

The Chairman next proposed the health of Mr. Harcourt, the proprietor of the estate. Of the personal merits of that gentleman it did not become him to say much in his hearing; but this he would say that he was devoted, heart and soul, to the cause of agricultural improvement in Ireland; and the greatest reward which he coveted was—he, the Chairman, was certain—the adoption of his example by other Irish landlords. It was under Mr. Harcourt's auspicies that he had become connected with that estate; and he could state with confidence that it was chiefly in that gentleman's benevolent anxiety to benefit the peasantry of this country, and to raise them from that dead level of poverty to which they had sunk, so far as in him lay, and in his frequent expressions to him of that anxiety, that the connection originated. (*Cheers.*)

The toast having been drunk with great applause, Mr. Harcourt briefly and feelingly replied.

The Chairman then rose to propose Mr. Houghton's health. Two years ago he found all around him in barrenness, and the people wretched almost beyond English conception, and now, thanks to Mr. Houghton, it is waving with grain. When he first came to Ireland, he almost despaired of the undertaking; but his hopes were sustained by experience of that gentleman's skill in the work of reclamation; and he felt that though he might do little, every rill contributed to make a rivulet. (*Cheers.*) Ireland had within herself all the means of becoming rich and prosperous. Her soil was fertile beyond measure, and her peasantry were quick to learn, kind and generous; and it is to the neglect of those who ought to have aided and directed their energies, that their past misery has been owing. On the subject of the corn law, he said that he conceived that it was the source of national prosperity, and ought to be maintained, as its repeal would make England independent of corn of Irish growth, which was more easily to be obtained than foreign. After again acknowledging Mr. Houghton's great services, he concluded by proposing his health, which was drunk with much applause.

Mr. Houghton, in reply to the toast, observed that it was impossible for him to find words for expressing the emotions which he then felt. Mr. Harcourt had told them that he had sought shelter behind him, Mr. Houghton; but, surely, if the means had not been supplied to him, his advice and efforts would have been of no avail. When he first visited this country, he was struck with astonishment at the appearance which it presented, particularly in that district; and could not but ask himself was it possible that tenants under the same landlord should be so differently circumstanced? The fact was, that the land held by most of them was in a state of nature; and they were not in a condition to bring its properties, which were first-rate, into activity. He suggested that something effectual ought to be done in aid of the soil and the people; and what they had that day seen was the consequence of his advice having been adopted (*cheers*). Ireland may be made a great country; but, in order to that, landlords must put their hands into their pockets, and stimulate their tenantry by example and otherwise. Much of her distress, he thought, was owing to herself. When one in the other country reads of Orangemen and Ribbonmen, and their doings, he naturally exclaims why cannot Irishmen, like Englishmen, occupy their minds with such subjects as trade and agriculture, and devote themselves to the working of their fields, their mines—of which there need be no want here—and all the other sources of wealth, to the greatest advantage. Until the spirit of discord was banished, the country will not advance as it ought to do; but he was happy to say that it was rapidly subsiding. He did not wish the country to be without all spirit. On the contrary, he would be for setting father against son, and son against father, and brother against brother, in the spirit of emulation—that each should vie with the other who should most excel in skill and industry in the cultivation of their fields (*hear, hear*). There were certain legislative measures necessary, he conceived, to the full development of Irish resourses; and the first of these was a law enabling proprietors of entailed estates to borrow money, equal to their income for a limited number of years, upon the security of their estates, to be applied to improving them under the authority of a board to be instituted for the purpose; and the second was a law authorising incumbents of parishes, many of whom hold extensive tracts of waste lands, to lease those lands, or certain proportions of them, under the sanction of their respective bishops. They hear of monied people emigrating from England to foreign parts; but they could not do better than emigrate here, for nowhere will the man of skill find a more profitable investment for his capital than in land purchases in this country. It had been said that it was not safe for an Englishman to live in Ireland. For himself he had only to say that, in this retired district, it had been his practice to sleep with unlocked doors. It had also been ignorantly or malignantly said that there was no safety for protestants in a catholic country; as to which he would merely remark, that the catholics here had nearly *kilt* him, a protestant, with kindness *(Cheers.)*. There were numbers in England who were capable of taking all the waste land in Ireland, were it in the market. Would that we could bring among us such men as Earl Spencer, or the Earl of Leicester! They would not be long here until they converted wildernesses into gardens. He would assert that property had its duties as well as its rights. All of us, in our respective spheres, have our duties and obligations to discharge; and on the owners of the soil there is no duty more incumbent than to cultivate its resources to the utmost for the benefit of themselves, of its occupants, and of the public at large *(Cheers)*. They have no right to condemn to sterility that which may be made a source of wealth. If he could only get the most noble Marquis Conyngham to visit his estates in this country, he thought that the general aspect of them, which was that of desolation, would inspire in him regret and sorrow. They included vast tracts, extending miles in length, the soil of which had never been opened to the solar rays, though of surpassing fertility, and only requiring to be drained of stagnant moisture, to be made capable of producing food for hundreds of thousands. If the reclaiming of that soil brought no profit to his lordship, which would be wonderful, still his coach-wheels would not roll less smoothly nor his pillow be less soft when he reflected on the immense good he had accomplished *(cheers)*. Sure he (Mr. H.) was, that were his lordship aware of the intense wretchedness which prevailed on his estates, he would not be at rest till he saw it relieved; and, at least his reward would be, the assurance that when his head was laid low, his memory would be gratefully cherished by thousands of warm hearts which are now frozen with poverty. Think of what England was fifty years ago, in regard to agriculture, and what it is now! Think of the inscription on Lord Leicester's mansion, bearing that where it stands there grew not a tree at the date of its erection, and the parish in which it is could not support itself—which parish now sends more grain to London than any other in the country! O, that we had more than we have of such men as Lord Leicester, Lord Spencer, and Lord Yarborough in Ireland! Let them now turn their eyes to Donegal. Why, excepting on a very few estates, that county has not advanced one step for the last thirty years. It would seem as if the people, for the most part, had forgotten the condition annexed to their existence, that they were to live by the sweat of their brows, such is the extent of ground lying in a profitless state. The fact, however, was, that the people were really industrious and most anxious for employment, but they had not the means of doing that which ought to be done by their landlords. In Engand, Mr. Harcourt had given him the means of reclaiming extensively; and he could wish that more Englishman than he would invest their capital in the soil of Ireland; for to no other country has providence been more bountiful. It is man's fault alone that she is not what she ought to be. Her soil, as he said before, was exuberantly fertile; there was abundance of coal and ores, which have been too much neglected; and she has a peasantry of all others the most capable of enduring hardships, and generous and grateful. Mr. Houghton concluded amidst much applause by proposing the health of "Mr. Deane, their Chairman," which was warmly received.

Mr. Deane, in returning thanks, pronounced a warm eulogium on the National School at Killybegs, which he had that day visited. He had visited many English schools, but none where the pupils were so well trained, or displayed so much cleverness as there. The scholars were peculiarly proficient in a knowledge of the Scriptures and geography. With the fine capacity for instruction which Irish children have, these schools could not fail to be productive of an immensity of good.

Francis Deane, Esq., Barrister-at-law (also a son of the chairman), rose to propose the health of a gentleman whose benevolence and patriotism were well known here and in the sister kingdoms; he meant Mr. Murray, of Broughton. He regretted that the proposing of the toast had not devolved upon one who was more capable of doing justice to that gentleman's merits; in alluding to which he could not but mention that, in approaching Killybegs he had experienced one proof of his public spirit, by having to travel along an excellent road which had been constructed at the joint expense of him and another estimable individual, Colonel Conolly. All he would say on the subject was, that he wished there were many more Mr. Murrays among them *(cheers)*. It was much to be regretted that Mr. Murray did not oftener visit his Donegal estates; but it ought to be remembered that he was the representative of an important county in parliament, the duties of which office necessarily occupied much of his time, and, besides, that the indisposition of his excellent lady compelled him to reside much in the neighbourhood of the metropolis. Before sitting down, he would occupy their time a little longer by remarking that, in England he had been told that he was exposing himself to no common danger by coming here. Now this was really more than a joke, being calculated to do a great deal of mischief; but he was bound to tell them that the false impressions as to the state of Irish society which obtained in the sister kingdom, were produced by the gross inventions and misrepresentations of a hireling press on this side of the channel *(hear, hear, hear)*. He declared that the impressions made on his mind by all that he had seen here were the very opposite of those to which he had referred, and sure he was that his countrymen had as much to learn from Irishmen as they had to learn from Englishmen. He could wish that there were more persons of capital from England settled in this country; and he thought that an excellent character might be formed by the amalgamation of the two nations. Mr. Deane concluded amidst cheers, by proposing Mr. Murray's health, which was enthusiastically received.

Mr. Houghton, as Mr. Murray's agent, returned thanks on his behalf. He could assure them that nothing but his parliamentary duties had prevented that gentleman from being present on that occasion. They were all aware of his goodness of heart and anxious desire for the improvement of this district. So deep an interest did he take in the improvement of Mulmussog, that he allowed Mr. Harcourt to supply himself with whatever stone and lime he wanted from his estates; and he might add that it was owing to an accidental meeting which they had had in Canterbury that Mr. Harcourt's thoughts were first turned towards the undertaking. Mr. Murray had only a life-interest in his Irish property, and had no issue; but were there a law such as the one he had suggested, authorizing the owners of entailed estates to borrow on their security, this district, he was convinced, would experience many more proofs that it had yet received of his munificence and public spirit.

A variety of other toasts were given, and the company at length broke up, highly delighted with their entertainment and the whole proceedings of the day.

WARWICKSHIRE AGRICULTURAL SOCIETY.

The prizes were awarded by the Judges as follows:—

PREMIUMS FOR CATTLE.

Age to be taken into consideration.

For the best milch cow, of any pure breed—1st prize, 4*l*., to Mr. W. Umbers, jun., long-horned breed; 2nd prize, 2*l*.—W. Holbech, Esq., Farnborough.

For the best milch cow, of pure long-horned breed, a prize of 4*l*.—Mr. Thomas Court, Lillington.

For the best bull, of any pure breed, a prize of 5*l*.—Mr. Richard Warner, Weston Hill, long-horned.

For the best pair of heifers, under two years old, a prize of 5*l*.—Mr. Thomas Court, Lillington.

For the best steer, not exceeding four years old, to be fed on vegetable food only, to be the property of the exhibitor (a member), and in his possession at least nine months prior to the show, a prize of 4*l*.—Mr. H. Townshend, King's Newnham.

For the best steer, not exceeding four years old, to be fed without restriction, and to be the property of the exhibitor (a member), and in his possession at least nine months prior to the show, a prize of 4*l*.—W. Wratislaw, Esq., Rugby.

For the best fat cow, which shall have calved once at least within the last two years, and given milk within the last 18 months; to be fed without restriction, and to be the property of the exhibitor (a member), and to be bred by a member, a prize of 5*l*.—Earl of Aylesford.

Given by Lord Leigh.—To the owner of the best bull, shown as extra stock, which has been used last season in the county, a prize of 3*l*.—Mr. Richard Worthington, Brockhurst.

PREMIUMS FOR SHEEP.

To be bred in the county by the exhibitor, a member.

To the owner of the best pen of five long-woolled theaves, not exceeding twenty months old, and fed on vegetable food only; 1st prize, 5*l*., Mr. T. Umbers, Wappenbury; 2nd prize, 3*l*., Earl of Warwick.

To the owner of the best pen of five long-woolled shearlings, not exceeding twenty months old; 1st prize, 5*l*., Mr. T. Umbers, Wappenbury; 2nd prize, 3*l*., Earl of Warwick.

To the owner (not being a ram breeder) of the best pen of five long-woolled ewes, having suckled lambs to July 1st, and fed on vegetable food only; 1st prize, 5*l*., Mr. Richard Archer, Tachbrooke; 2nd prize, 3*l*., Mr. J. P. Evans, Griff.

To the owner of the best shearling long-woolled tup, a prize of 5*l*., Mr. Edw. Lythall, Farnborough.

To the owner of the best long-woolled tup, a prize of 5*l*., Mr. Samuel Umbers, Dunton Hall.

Given by Lord Leigh.—To the owner of the best tup, shown as extra stock, open to the county, a prize of 2*l*., Mr. W. Umbers, jun., Wappenbury.

PREMIUMS FOR HORSES.

To the owner of the stallion best adapted to farming purposes, and used in the county, a prize of 5*l*.—Mr. Edmund Ivens, Ufton.

To the owner of the breeding mare best adapted to farming purposes, the property of a member—1st prize, 3*l*., Earl of Warwick; 2nd prize, 2*l*., Mr. J. R. Turner, Stoneleigh.

Given by E. B. King, Esq.—To the owner of the best cart filly, or entire cart colt, 2 years old, bred by and being the property of a renting tenant in the county, a prize of 3*l*.—Mr. J. P. Evans, Griff.

PREMIUMS FOR PIGS.

To the owner of the best boar pig, used in the county,—1st prize, 2*l*., Mr. Thomas Ball, Long Itchington; 2nd prize, 1*l*., Mr. Richard Worthington, Brockhurst.

To the owner of the best sow, the property of a member,—1st prize, 2*l*., Mr. John Burbury, Leek Wootton; 2nd prize, 1*l*. Mr. Richard Warner, Weston Hill.

There were several prizes awarded to the agricultural labourers, and sweepstakes entered into by the members.

The members of the society dined together at the Court House: the Earl of Warwick, as president, took the chair; Vice Chairman, Sir J. Mordaunt, Bart., M.P. Amongst the company were—Lord Brooke, E. B. King, Esq., B. D. Granville, Esq., H. C. Wise, Esq., C. M. Caldecott, Esq., Capt. Beville, Messrs. S. Umbers, T. Umbers, E. Umbers, Chapman, Pratt, Heath, Barclay, Worthington, Wm. Shaw, a Member of the Council of the Royal Agricultural Society, Wratislaw, Wm. Umbers, jun., Holbech, Ball, Evans, Hingham, &c., &c.

Lord Leigh visited the show yard in the morning, but was unavoidably prevented from being present at the dinner.

Judge of Cattle and Sheep.—Mr. T. Inskip, Manton, Beds.

The annual sale of rams belonging to Mr. T. Harvey, of Flitchampsted, took place in a field adjoining. We understand that one tup sold as high as Forty Guineas.

ST. COLUMB FARMERS' CLUB.—On Monday, Sept. 20, an able lecture was delivered to the members this club, by Mr. J. Geake, veterinary surgeon, on the History of Veterinary Medicine. The lecturer commenced by stating that "man, ever ready to improve surrounding objects to his advantage, could not be long without subjecting to his use such animals as his reason led him to suppose would prove most useful, and his experience found most tractable; but that in taking them from their wild state into confinement, it naturally arose that they could not long continue in perfect health; and hence their owners were compelled to apply such remedies as their small stock of information pointed out." He then proceeded to notice the treatment of the horse by the Egyptians, tracing the history of the art to the Grecians and Trojans, stating that even the great Xenophon, with several others, wrote treatises on the horse, and among the Romans, mentioning several authors who had written on the subject. After the Romans, there was a considerable space of time in which the veterinary art was altogether neglected, or entrusted to the shoers of horses, shepherds and swineherds, till the 16th century, when the interest taken in the improvement of the art was evinced by the numerous authors who wrote on the subject, and during the 17th century the art made rapid progress. The lecturer then spoke of cattle, confining himself principally to that disease which committed such ravages in the different countries—

the murrain; and noticing the earliest records of the disease, and the various treatment pursued. He particularly mentioned the dreadful destruction which this disease made in 1711, and from that time to 1814, when it made such havoc in England, that government ordered that all cattle which showed any symptoms of it should be destroyed, and compensation be made to the owner. Several persons endeavoured to prevent its ravages in the most praiseworthy manner, but were unsuccessful. At length, a school for the study of the veterinary art was established at Lyons, in France, and from the diligence and skill of the professors, the epidemic was evidently restrained, and it was now deprived of most of its terrors. In mentioning the establishment of other schools, he pointed out the foundation of one in England, which, he said, being so near the metropolis, was rather disadvantageous to it, as the patients were principally or nearly all of them horses. "But, at length," continued the able lecturer, "a new era has sprung up, and schools are now established to remedy this deficiency. If that indefatigable and excellent veterinarian, Mr. Youatt, had done nothing more than promote a scientific enquiry into this important subject, he would yet have left an imperishable monument to his fame; for it was principally owing to the untiring zeal of that distinguished man that the attention of English veterinarians was drawn to this important subject, and that the study of cattle and sheep (hitherto so disgracefully neglected) was now better understood, and the dreadful annual loss which this country sustained by the deaths of those animals was now very materially diminished. Why was it that the board of agriculture in England and the agricultural societies so long neglected their duty, while in every Continental State the improvement of veterinary science had been undeviatingly and unsuccessfully pursued? The Highland Society of Scotland had long reaped the benefit of its judicious patronage of veterinary science in the increased value of Scotch cattle, and it was now pretty generally acknowledged that the agriculturists of England were not inattentive to the dictates of reason, interest, and common sense."—The subject to be introduced at the next monthly meeting is the Wire Worm, by Mr. T. Glanville, of Trevithick, St. Columb.—*Cornwall Gazette.*

THE NEW EPIDEMIC IN IRELAND.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—You would oblige many of your Irish friends, if you would inform them if there is any effective cure for this new malady, or has it made its appearance amongst the stock in England? The animal when first affected, becomes dull and refuses food, having a short consumptive cough, and frequently before any remedy can be applied, is dead. When opened, they present the appearance on the liver, of white tubercles, dotted thickly over the coats of the liver. No application having any effect, if any of your numerous correspondents would condescend to inform us on this side of the water of any known remedy, they would greatly oblige many of your Irish friends.

I have known one stock-master to lose 47 head of horned cattle, without effecting one single cure.

I am, Sir, your's respectfully,

Mallow, Sept. 3. CORK.

Sir,—Several of my cattle, and numbers of my neighbours', have taken the present epidemic. They are seized with a heavy cough, and discharge much water from the eyes, and some at times take fits of shivering.

If any of your readers would be kind enough to give me any information on the treatment of this distemper, it would indeed very much oblige,

Drogheda, Sept. 8. AN IRISH SUBSCRIBER.

Sir,—I thank you for your attention to my last communication respecting "The smut in wheat, and means for its prevention," which appeared in one of your last month's papers; and having noticed in your *Express* of yesterday, an enquiry from your Irish friends as to a remedy for the epidemic now prevalent amongst their cattle, I beg to trouble you with the following information for their perusal.

From their description of its symptoms, I have little doubt that the distemper is caused by the excess of moisture in their food, (the natural consequence of the late remarkably wet season)—a circumstance which, I believe, frequently occasions the rot or bane in sheep. It is remarkable, that in reference to the last named disorder, very rarely, or perhaps never, are sheep that happen to be fed on salt marshes (that is to say, land that has been gained from or is occasionally overflowed by the sea), subject to the ravages of the disease. This consideration induced certain agriculturists to make trial of dry *salt* as a medicine, which I believe was attended with complete success; and I would therefore suggest to your correspondents the propriety of an immediate trial of this cheap and simple remedy. As a preventive, I entertain little doubt of its value; and in cases where the disease has not reached a very advanced stage, I think it likely to effect a cure. It is a well known antidote for worms in cattle, keeps the body cool, and helps digestion. Probably the best mode of administering it, is to give the cattle frequently a handful of the salt, and to get them into the habit of licking it off some large flat stones which should be placed in different parts of their pasture. I understand that they have naturally a liking for salt, so that the habit is likely to be taught them without any great difficulty.

For sheep only, a spoonful of dry salt twice or three times a week, will be sufficient as a preventive in their case; this remedy, even after the attack, has resulted satisfactorily. Should your friends find this a successful mode of treatment, they will of course, for the benefit of the public, communicate to you the issue of its operation.

Yours truly,

Sept. 15. AN ANNUAL SUBSCRIBER.

CHIPPING NORTON.—There is at this time a large building in the course of erection in this town, for the purpose of a corn market, with accommodation for the meetings of the town council and for other offices. The corn market has been hitherto held in the open street, and the parties attending it of course exposed at all seasons to the inclemency of the weather. We find that the farmers and others who frequent this market, will be mainly indebted to the exertions and liberality of J. H. Langston, Esq., M.P., and J. Ward, Esq., of Chipping Norton, for the erection of this building, which, independent of its utility, will be an ornament to the town.

COMPOST OF MANURE.—A premium of 30*l.* is offered by Lord Worsley, M.P., to any person who shall discover and introduce any description of compost of manure which, after due trial in Lindsey, shall be deemed calculated to be of general benefit; three competitors' prizes to be awarded after the trial of each. If it be not awarded in the present year, Lord Worsley will add ten pounds in each succeeding year, until the amount reaches fifty pounds, unless the premium be sooner awarded.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR SEPTEMBER.

This has certainly, taken as a whole, proved a most propitious month for the farmer, and been productive of an immense amount of benefit, not only to the cultivators of the soil, but also to the community at large. From the 1st until about the 20th, the weather, with some few exceptions, was unusually favourable for the in-gathering of the crops, and we are happy in being able to intimate that during the above period large breadths of wheat, barley, and oat-lands were cleared of their produce under the most auspicious circumstances; in fact, we never saw crops carried in finer condition. The latter end of the month was marked by the almost daily continuance of heavy showers of rain, particularly in the southern and western districts; but as the whole of the grain, except a few beans, had been stacked, no obstruction was offered to the progress of farm labours. In the north, north-east, and north-west of England, the process of carting, &c., has been much impeded by the wet, yet, as at least four-fifths of the new corn has been already saved, no serious consequences are expected to ensue. Should the weather prove fine for the next ten days, everything will be got in, and the last "harvest home" will be celebrated even in those quarters generally considered the most backward. The question of the productiveness of the present year's crops is now occupying the serious attention of the agricultural body, and much do we regret our inability to make so cheering a report of them as could be desired. The process of thrashing having been carried to a great extent, some pretty correct estimate can now be formed of the yield of wheat. On some of the heavy lands it has come up to a full average, but a decided falling off is apparent in the wheat grown upon light soils—so much so, indeed, that we are aware of parcels coming to hand which do not exceed in weight 57lbs. per bushel, and the acreable produce does not amount to more than three quarters. These observations are not the offspring of theory but are deduced from practical experience and observation. The largest growth which has come under our notice was that of eight-and-a-half quarters per acre, which large quantity was produced on a very highly cultivated farm in Kent. As to the quality of the grain, this is far from excellent; yet we sincerely hope that an adequate supply of good sound parcels will be procured, of home growth, to meet contingencies. However, it is very evident that the enormous supply of foreign wheat which has passed the customs in the various ports of the United Kingdom at the nominal rates of 1s. and 2s. 8d., which has amounted, on a fair calculation, to upwards of 1,450,000 qrs., will be required to make good any deficiency which may in future be observed in the receipts of new wheats at the various markets. Nearly the whole of the wheat other than that of home growth which has been released for home consumption, has proved of very superior quality, and, from the state of the trade at Mark Lane and elsewhere, during the week commencing on the 27th, we are firmly of opinion that future rates of currency will not rule so low as many persons appear to anticipate. That prices are now high we freely admit, while it may be safely calculated that a fall of more than from 5s. to 7s. per quarter will not take place for some time hence. The barley crop appears to be exceedingly abundant, but a large quantity continues to arrive much out of condition; yet a deficiency of good malting sorts is not complained of. Those oats which were cut early appear to have suffered considerably, but the later sorts have not exhibited the slightest falling off; and we may safely venture to affirm that the yield will even exceed the consumption. The produce of beans and peas has been almost unprecedentedly large, with every prospect of fair quotations being obtained for those articles.

Those out-door farm labours usually carried on at this season, viz., ploughing the land destined to be sown with wheat, and the sowing of the heavy qualities as winter stocks, have gone on briskly under the most auspicious circumstances; while the soil has been found to work remarkably well, particularly in the east, where less rain has fallen than in many other parts. Other labours are in a very forward state, and every thing relative to agriculture is in a very satisfactory condition.

The various country markets have been rather scantily supplied with English wheat in the course of the month, which has produced a ready inquiry for that article at improved quotations, and good clearances have been effected. Foreign wheat, both free and in bond, has been held on full as high terms, and many very large sales have taken place, owing to the millers being short of stock. In barley little has been passing at an abatement of 1s. per qr.; but malt has fully supported its value. The oat trade has ruled dull at drooping prices; and the same observations may be applied to beans, peas, and flour, of which a large quantity has been brought forward.

From Ireland we learn that the whole of the crops has been secured in the southern quarters; but in the north, large quantities of wheat and oats yet remain out. The general produce of the corn appears to be somewhat better than anticipated, and preparations are being made for large shipments of the latter article to the English outports. Barley, beans, and peas are well represented. In most of the markets the trade has continued firm, and no variation of moment can be noted in the different quotations.

Throughout Scotland the utmost activity has been observable in the fields, and the harvest, on the whole, has progressed exceedingly well. The samples of new wheat, as yet, come badly to hand; but no accurate criterion can be formed of the actual result of the growth. Wheat has sold at very high figures in Edinburgh and elsewhere, with a brisk inquiry, but in other corn little appears to have been doing.

We never recollect to have seen so much pasturage for stock as has been observable this month, caused by the humidity of the atmosphere; hence, the crop of aftermath and clover has been very abundant; but, on account of the wet, scarcely any of it has been got in otherwise than out of condition. Both beasts and sheep have fared extremely well, and appear to be rapidly recovering from their late serious attacks of the epidemic.

The following is our usual monthly statement of the supplies and prices of stock exhibited and sold in Smithfield cattle market. The former have consisted of 14,299 beasts, 119,400 sheep and lambs, 900 calves, and 2,800 pigs; while the latter have ruled as follow:—Beef, from 3s. 2d. to 4s. 10d.; mutton, 3s. 6d. to 5s. 2d.; lamb, 4s. 10d. to 5s. 8d.; veal, 4s. 6d. to 5s. 10d.; and pork, 4s. 8d. to 5s. 8d. per 8lbs., to sink the offals. Lambs may now be considered out of season. On most market days, the demand for the best beasts, sheep, calves, and pigs has been steady at improved rates; and the value of the secondary and inferior sorts has been well maintained, owing to the large numbers of dealers in attendance, while good clearances have been effected.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in Smithfield Cattle Market, on Monday, September 28, 1840, and Monday, September 27, 1841.

At per 8lbs. to sink the offals.

	Sept. 28, 1840.						Sept. 27, 1841.				
	s.	d.		s.	d.		s.	d.		s.	d.
Coarse & inferior Beasts	2	10	to	3	0	..	3	6	to	3	8
Second quality do.	3	2		3	4	..	3	10		4	0
Prime large Oxen......	3	6		3	10	..	4	2		4	4
Prime Scots, &c.......	4	0		4	4	..	4	6		4	8
Coarse & inferior Sheep	3	2		3	6	..	3	4		3	8
Second quality do.	3	8		3	10	.	3	10		4	4
Prime coarse woolled do.	4	0		4	4	..	4	6		4	10
Prime Southdown do..	4	8		5	0	.	4	10		5	0
Large coarse Calves ..	4	2		4	6	..	5	0		5	6
Prime small ditto.	4	8		5	0	..	5	8		5	10
Large Hogs...........	4	0		4	6	..	4	10		5	4
Neat small Porkers ..	4	8		4	10	..	5	6		5	8

SUPPLIES.

	Sept. 28, 1840.	Sept. 27, 1841.
Beasts...............	3,658	3,243
Sheep and Lambs	27,510	23,920
Calves................	121	166
Pigs..................	563	487

Up to Newgate and Leadenhall markets, the arrivals of slaughtered meat have been on a very limited scale, caused by the warm weather. The trade has continued steady at improved quotations, they being as follow:—Beef, from 3s. 2d. to 4s.; mutton, 3s. 6d. to 4s. 8d.; veal, 5s. to 5s. 8d.; and pork, 4s. 10d. to 5s. 8d. per 8lbs.

HUNTINGDONSHIRE.—A large quantity of wheat was stacked in the early part of the harvest, in a very raw and damp state, owing to the short time that it remained in the field after being cut. The progress of carting was arrested on the 3rd inst. by the rain which fell on that day; on the 4th we had a great quantity of rain; the weather continued showery until the 10th, after which we had ten days of good harvest weather. Great fears were at one time entertained about the weather, and a considerable quantity of wheat was carried between the 3rd and the 10th in the Fens, in a very wet state. A great many people were in too much of a hurry when the weather cleared up. Much corn, especially barley, was got up before it was sufficiently dry; but a great deal of corn has been carried in fine condition in the Fens, especially oats, these last few days, and there is now very little to get up. It is our opinion that only one-fourth part of the wheat in this county is dry enough for immediate use, and that the remainder will not be fit for use until next spring and summer. The yield of wheat is good, but the quality is not good generally. There will not be more than half of the barley fit for use until next March; the quality is generally very bad; good malting barley will be very scarce indeed. There is an abundance of keeping on the eddishes and stubbles, and stock are doing well, except lambs, which scour in some places. The fallows are in a wretched state, in consequence of the showery weather.—Sept. 22.—*Huntingdon Gazette.*

CALENDAR OF HORTICULTURE FOR OCTOBER.

This is the season wherein the garden may be brought into that condition of neatness, which it ought to present prior to the setting in of winter. Every crop which can be removed is ready to be taken up, and as the work proceeds, every plot or border can be made clean, even, and entirely free from weeds.

IN THE VEGETABLE DEPARTMENT,

Broccoli requires the first care: the "Cape" for autumnal use, as it is cut, should be entirely removed, otherwise the leaves and stem decay. The Portsmouth, sulphur, white, &c. for spring, may be treated in several ways. Some direct to take up a number of plants, and lay them in a trench with their heads sloping to the north, and only a few inches above ground, covering the stems with earth; but if trench-planting have been adopted in the first removal, nothing more will be required than to earth the stems to the lowest leaves, as is done with celery.

Beetroot may be taken up, trimmed carefully, but not close at the crowns, and secured in sand under shelter. *Carrots* are treated in the same manner.

Beans:—The mazagan, or early long-pods, are sown towards the end of the month, either in rows, or thickly in beds to be transplanted. Prepare a small plot, three or four feet square; loosen the soil a little, and strike drills three inches asunder, in which sow the seeds about two inches apart. Cover them with two inches of fine earth, and pat it even. When the beans rise two or three inches high, they can be lifted and set in rows; or, if frost come on early, so small a bed can be easily protected.

Cauliflowers, now in frames, must be exposed as much as possible to the air, unless the weather be very rainy; in that case, let the glasses be kept on. In the last week, plant out finally, a quantity to be protected under bell or hand-glasses, to stand at a convenient distance in rows four feet apart; four plants may be placed under a glass for the present. Every glass must be kept close over the plants till they have taken root, and then air must be given.

Cabbage:—A few of the August seedlings may be put out in drills two feet asunder; the ground should be manured, digged, and planted as the work advances.

Endive:—Tie up for blanching, some of the strongest plants. Draw dry earth very high around them.

Lettuce, radish, small salads, can still be sown, but early in the month.

Spinach will be advancing rapidly if the weather be warm; let the ground be kept very clean, and thin the plants to three inches distance.

Asparagus-beds should be dressed—first removing the haulm, and forking up the weeds; then cover the surface with three or four inches of very rotten dung. Over that, lay a covering of dryish earth digged from the alleys. Lay all the asparagus haulm in the alleys, tread it down, and leave it to decay into vegetable mould.

For forcing, hot-beds of good leaves should now be prepared; also dung or tan beds. The roots may be planted as soon as the beds are settled, and the heat tempered.

Dress the beds of *aromatic herbs*. Dig the ground lightly, clearing away weeds, and cutting down all the old stems; then dress with a covering of light loam, incorporated with old manure.

Potatoes may be taken up as they are ready; and in doing this work, it would be wise to lay the ground in neat ridges to mellow during winter.

Dig, trench, and manure, all vacant spaces.

FRUIT DEPARTMENT.

October is the most fitting season of the year to transplant every sort of fruit and ornamental trees. If the object be to prepare an entire new peach border, the draining of the ground should be seen to; that is, if the subsoil tend to retain water. A rubble, or open stone drain, should be formed in front of the whole line, and six feet from the wall, the base sloping six inches in the entire fall toward the drain. Chalk and shaly rock are capital natural drainage; therefore, a six-inch stratum of chalk, brick-bats, or broken sandy stone, must produce an excellent substitute. Upon this base, fifteen to eighteen inches of sound pasture turfy loam, will form the best and simplest medium of healthy vegetation. All the manured composts, however strenuously recommended, are at best doubtful.

The same principles will hold good in preparing borders for all other fruit trees; for in planting orchards and independent trees, fresh turfy loam and a dry foundation, are propitious in every case. When planted, the roots ought to be opened in a radiating form as correctly as possible, and the transfer should be effected with all expedition. The earth made very fine, being trickled among the roots, must be thoroughly puddled by means of a stream of water from the nozzle of a watering pot. With these precautions, success will be almost certain; and the tree will start off in the spring having developed many new spongelets during the autumn.

In this way plant apple, pear, plum, cherry, peach trees, &c.; also currant, gooseberry, and raspberry shrubs. The vine, and fig, may also be planted or deferred till Feburary, because they root speedily. Propagate the currant and gooseberry by cuttings of the wood of the late summer. Take off all the buds except the three or four at top; fix each firmly in the soil, previously trickling a little sand around the base of the cutting. Do not prune the trees, otherwise small birds will perchance devour nine-tenths of the remaining fruit buds during the winter.

Gather winter pears and apples, and as a criterion, try to lift the fruit gently; if ready, it will detach itself with a snap, the pear especially. The best pears ought to be housed before any frost occur; otherwise, they decompose rapidly. A rather warm, but quite dry dark room, appears favourable to the beurrées, and finest pears of Belgium; the longest keepers are the B. rance, and the easter beurrée; the D'Aremburg is also very fine.

Apples may remain much longer on the trees, and indeed should be mellow. In storing, a dark, airy, cold room, inaccessible however to frost, is very desirable; and in it (according to the opinion of one of the first fruit growers in Berks, whom we have lately consulted) simple shelves, with a breast slip of wood to prevent rolling off, are all that are required. On them the apples may lie five or six inches deep, one layer above another without injury. Some persons still adopt the plan of previously laying the fruit in heaps to sweat. But, at all events, each should be wiped dry before it is stored; but no straw should be used.

Late grapes of the vinery will be ripe, and should be kept as dry as possible, keeping the house ventilated in sunny days, but close in wet weather, and at night.

Succession pine plants must be pushed on in warm pits heated by hot water and linings of dung. The large plants for fruiting in summer, are kept cool and nearly dry.

FLOWER DEPARTMENT.

In the first week take up, carefully pot, and protect every green-house plant that has been in the ground, which it is intended to preserve. Bring all the other plants into their winter quarters, but give air freely, and abate water. Top all the vigorous young geraniums raised by cuttings, to make the plants stocky.

Place Auriculas in an airy frame; *Camellias* in a shady, cool house or pit, where they can be secured from severe frost.

Take up some plants of shrubby *calceolaria*, with good balls of earth, and secure them to furnish young wood for cuttings in spring.

Do the same by the best *fuchsias.*

Roses in pots introduced to the flower house or warm pit, will bloom early.

Chinese Primulas are raised now by cuttings; those with fimbriated flowers are the best, but plants raised from seeds are preferable.

Cuttings of *verbena* may still be taken; *calceolarias, penstemens,* and many herbaceous species, may also be raised, and the best method we have found to be the following:—Set a small frame in a bed of heath-soil, pile the earth around it close to the glass a foot thick on every side; level the soil and plant the cuttings in sanded holes. Keep the glass close, and cover it effectually on frosty nights; thus we raised every cutting with security in 1840-1, and yet the frost was intensely severe. *Camellia* cuttings could thus be raised.

Mow lawns once, roll walks, rough dig or fork all the quarters, prepare beds for bulbs, and make every bed and the shrubberies neat and orderly.

MUSEUM OF NATURAL HISTORY AT KNOWSLEY HALL.—The aviary and museum of natural history at Knowsley Hall, the seat of the Earl of Derby, about eight miles from Liverpool, are great objects of attraction. The principal object of the Earl of Derby, besides a desire to possess living animals for the elucidation of the science of Natural History, has ever been to introduce such animals as are likely to become useful as either food, or to furnish materials for manufacturing purposes. His lordship has been eminently successful as regards the Alpaca or Peruvian sheep, which at the present time occupy so much attention, particularly by those engaged in pastoral pursuits. There is a small flock at Knowsley, and the wool upon those which his lordship has bred in England is found to be much superior to that imported from South America. There are many species of deer, antelopes, and other animals, which his lordship is attempting to naturalise. The large collection of pigeons and pheasants adds greatly to the beauty of the aviary. The ostrich, emu, rhea, cassowary, and many other beautiful and rare birds, never fail to delight visitors by their grotesque figures and beautiful plumage. There is a numerous collection of carnivorous birds and parrots, both of which engross the visitor's attention. The ponds in the aviary are adorned with a beautiful and valuable collection of rare species of water fowl from most parts of teh world; this assemblage of aquatic birds is said to be the finest in Europe. The ornitholopist would ever find a rich treat for observation, which would amply repay a visit from any part of the kingdom. The aviary at Knowsley covers an area of about ten acres. The museum occupies two large rooms in the Hall, which are filled entirely with birds; and it is now in contemplation to put up another room for the reception of other objects of natural history. Some idea may be formed of the extent and value of the collection when it is known the museum contains above 6,700 specimens of birds, and a third of this number unstuffed remains to be added. Admission may be obtained to visit the aviary, museum, and grounds, by applying to the Earl of Derby, who is ever willing to give permission to strangers wishing to see these places either from motives of curiosity or amusement.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

WORCESTER FAIR.—At our great annual fair on Monday, owing to the abundance of keep in all parts of the country, the supply of sheep was not so numerous as at last year's fair, but the quality, both of stores and fat sheep, was much better, and they averaged 1s. per head higher than last year; fat sheep (which were all disposed of) meeting a very ready sale at 6½d. Among the rams were many very fine animals of the Leicester, Southdown, and Cotswold breed. The show of cows (from the cause above stated) was also smaller than usual, and any with the appearance of meat met with a ready sale; prices averaging from 6½d. to 7d. Cows and calves, and also barrens, were much sought after, but there were very few shown, and those of an indifferent description. There were a few very fine beasts belonging to two Herefordshire gentlemen, which were speedily purchased. There was a tolerable supply of horses, but very few good ones, consequently not many changed hands. Very little business was done in the pig market. The number of animals brought to market was as follows:—Sheep, 6,414; Pigs, 257; Beasts, 299; Calves, 17; Horses, 374. Of cheese there was very little pitched except by factors, the whole quantity in the market being considerably under 30 tons. Best fetched from 65s. to 70s., seconds 56s. to 68s., skim 30s. to 40s. Very little business was done, and prices were looking down.

At NEWTON FAIR there was but a small supply of fat bullocks and sheep, and the former must be quoted at from 9s. to 10s. per score; the latter at from 5d. to 6d. per lb. There was a remarkably fine show of cows and calves, and several sales were effected at high prices; as thus, a beautiful heifer and calf were sold for 19*l*. In another instance also 18*l*. 10s. was bid for a fine heifer and calf, and refused. And, further, six heifers and calves were sold for nearly 16*l*. each. The show of steers was very plain, and in this way there was not much doing. In the market the same day, pigs (carcases) were from 8s. 3d. to 9s. 2d. per score. Store pigs, dear. Butter, from 11d. to 12d. per lb.; eggs, 1s. per dozen; potatoes 6d. per score; cabbages, 2d. to 3d. each. Poultry—ducks, from 4s. to 5s.; fowls, 3s. to 4s.; chickens, 2s. to 3s. per couple. Shambles—beef, 6d. to 7d.; mutton, 5¾d. to 7d.; lamb, 6d. to 7d.; veal, 6d. to 6½d.; pork, 5¾d. to 7d. per lb.

CARLISLE CATTLE SHEEP AND HORSE FAIR, Monday, Sept. 20.—There were about 3000 cattle of all sorts, comprising about 1000 Galloways, 1200 Highlanders, 600 Irish, 150 short-horns, and 50 cows. Sales were slow, and prices in general lower than was anticipated. 1600 sheep, principally cheviot and half-bred lambs, with a few crosses, and slack ewes, were exhibited; and, as with the cattle, sales were anything but quick without any improvement in prices. A considerable portion of both cattle and sheep were unsold at a late hour. Owing to the prevalence of easterly winds a portion of Irish cattle on sea did not get forward, and the show altogether was inferior to that of the same market last year. The horse market was very uninteresting, either in point of numbers or quality, and the demand was consequently dull, and sales difficult to effect on any terms, except for good articles, of which the number was very limited.

ASHBOURN CATTLE FAIR, Sept. 20.—This fair was tolerably well supplied with cattle. Fresh barren and incalved cows were much in demand, and good prices were realised for them. The sale of inferior stock was not so brisk as usual. Young stock were plentiful, and well sold. A great quantity of sheep were penned, but sales were dull, excepting for lambs, which fetched fair prices. Of horses, those that were useful met with ready customers at good prices, the inferior kinds met with a dull sale. Beef and mutton may be quoted at about 6d. per lb. At the cheese fair, on the following day, prices averaged 58s. to 56s., and some few dairies at a shilling or two per cwt. more, nearly the whole of which was sold.

GISBURN FAIR, Sept. 20.—We have to report a large show of good beef, and great many buyers, which caused a brisk sale; prices about the same as last fortnight. We had only a short supply of lambs, which were sold at 1s. 6d. to 2s. per head advance. A very good show of in-calvers, which met with a good market. Also a very large show of lean Irish; one lot of 67 was sold for 9*l*. per head.

NORTHAMPTON CHEESE FAIR.—There were a great many store beasts at our fair on Monday last. Of good Herefords there were very few, but the Devons, Shropshires, and Welch, constituted what might be called a large fair. On account of the immense quantity of grass now on the land, a great portion of the beasts were bought by the graziers, at prices much above those of the same period last year. The supply of fat beasts was equal to the demand. There was rather a large show of sheep. Good ewes for tupping, store shearhogs, and store lambs were in demand, to that the principal part of the sheep were cleared off. There were not a great many milking cows, but what there were met a ready sale, the demand for milch cows in London being very great; all apprehension of the milk being infectious from the late epidemic having vanished. There was a large lot of superior breeding ewes belonging to Mr. Roger Hewitt, of Pitsford, which were sold at high prices. Some of them fetched nearly 80s. each, and the whole averaged 60s. a-piece. They were all bred from the flock of Mr. Richard Hewit, of Dodford, near Daventry. The quantity of cheese pitched was extremely small, and prices averaged from 56s. to 63s.

ABINGDON FAIR on Monday last was very dull, and although it is not generally a large horse fair, we never before saw so few, and those of a very inferior quality. Other things were of a like character, and trade heavy at late prices.

BUDE, Sept. 23.—The annual Fair held here yesterday was scarcely so well supplied with cattle as on many former occasions, but the number of sheep was about as usual. Bullocks sold remarkably well, but there was no improvement in prices to be noticed; in fact, some persons who appear to be well acquainted with the state of the country in that respect, seem to think that the present high prices can hardly be expected to be sustained much longer, notwithstanding their friends are now at the helm of affairs. The best beef was worth about 60s. per cwt., which was also something about the value of cows and calves. Steers and working oxen sold well at good prices, according to their respective sizes, breeds, and inclination to fatten, &c. &c. Sheep were worth about 6d. per lb. Fat store ewes, wethers, and lambs, were also in good request, though some were driven away unsold.

HORRINGER SHEEP AND LAMB FAIR.—This annual mart was never better supplied with good stock than on Saturday last, and upon no occasion was there more disposition to do business. Business might be said to have reached its height about two o'clock, when the rain fell in torrents, and drove the company off the ground, so that many lots that were previously "in price" were driven off without completing the purchases. The stock was in fine condition, and there was great inquiry both for Down and Half-Down shearling ewes—the former selling from 32s. to 42s., the latter from 35s. to 44s. Down wether shearlings from 33s. to 38s.; Half-Downs from 30s. to 35s.; Half-Down ewe lambs from 25s. to 27s.; wethers 21s. to 25s.; Half-Leicester lambs from 23s. 6d. to 28s. per head. The shew of white-faced sheep was very limited, as also of fat stock; but what were sold fetched from 7s. to 8s. per stone. The Marquis of Bristol shewed a stand of Down Wether Lambs, which were admired by all who saw them, and pronounced by competent judges not to be surpassed in the field. There were many stands of excellent Down Tups, which were sold from 6*l.* to 10*l.* a-head; but upon the whole there was little done in selling or letting this description of stock. Mr. Oakley shewed a stand of pure Leicester Tups, which were caught up at 3*l.* to 4*l.* for Lambs; Shearling 6*l.* 10s. to 9*l.*; two-shears from 7*l.* to 10*l.* The Beast market was short, there having been but two stands of Galloways shewn by Mr. Ruffell, and the trade anything but brisk; what business was done in this description of stock was at about 17*l.* per head. Mr. Jaggett shewed a stand of three-year old short-horned Oxen, which brought 15*l.* 10s.; Homebreds 18*l.* 10s. Highland Scots, Welch Heifers, and Steers none. Cows but few, and none worth quotation. DOWN LAMBS.—Duke of Norfolk's wethers, 22s. 6d.; Marquis of Bristol's ewes, 22s., wethers, 28s.; E. Witt, Esq., Fornham, wethers, 24s.; J. Phillips, Esq., Barton, wethers, 25s.; Mr. Booty, Tuddenham, wethers, 22s. 6d.; Mr. Clover, Kirtling, Cambridgeshire, wethers, 27s.; Mr. Roper, Rougham, ewes, 23s.; Mr. Smith, Barton Mere, ewes, 21s., wethers, 21s.; Mr. Webb, Hildersham (refuse), ewes, 21s.; wethers, 20s. HALF-DOWN LAMBS.—G. Pawsey, Esq., Lidgate, ewes, 24s., wethers, 27s.; Mr. Burrell, Westley, wethers, 26s. HALF-LEICESTER LAMBS.—E. Witt, Esq., Fornham, ewes, 23s. 6d., wethers, 23s. 6d.; J. Muskett, Esq., Fornham, ewes, 25s., wethers, 25s.; Mr. Denton, Rushbrooke, ewes, 28s., wethers, 28s. DOWN CRONES.—Marquis of Bristol's, ewes, 24s.; Duke of Norfolk's, ewes, 23s.; J. Phillip's, Esq., Barton, ewes, 22s.; Mr. Rainbird, Hengrave, ewes, 23s.; Mr. Denton, Rushbrooke, ewes, 21s. HALF-DOWN CRONES.—G. Pawsey, Esq., Lidgate, ewes, 24s.; Mr. Booty, Tuddenham, ewes, 20s.

SHEEP SHOW AT MOFFAT, AND FAIR.—A show of sheep was held upon Friday, the 17th current, in a field adjoining the pretty village of Moffat, justly styled the Montpelier of Scotland, and the attraction was greater than usual, from the circumstance that the Highland Society, with the view of promoting the local shows of sheep, and thereby fostering the spirit of competition and improvement in the breed of sheep, cattle, &c., had in a most liberal manner offered premiums this season to the extent of 24*l.* for Cheviot sheep for a district round Moffat, comprehending the pastoral districts of Dumfries-shire, and of the adjoining counties. In addition to these premiums, the Moffat Local Sheep Show continued to give premiums for certain descriptions of stock. The day was very fine, and the attendance of farmers and landlords from a distance exceeded any thing that has hitherto taken place there, and a great quantity of splendid animals changed owners. The show of Cheviot sheep, particularly, was more numerous and finer than upon any previous occasion, many of them having been brought from the adjoining counties to compete for the Highland Society's premiums. We are glad to have it in our power to say that these premiums, with one exception, have been carried off by Dumfries-shire farmers, and that the first price was gained by Mr. Moffat, of Craigbeck, in the vicinity of Moffat, for a splendid tup bred by that enterprising young farmer, Mr. Carruthers of Kirkhill. Mr. Aitchison, of Menzion, competed for all the Highland Society's premiums, but was only successful in carrying off one prize. This fact speaks volumes for the quality of stock shewn, as it is well known that Menzion is a famed breeder of stock. Messrs. Wilkin of Tinwald Downs, and Laurie of Terregles Town, both extensive and eminent breeders, had each about a score of very superior Leicester tups, bred by themselves, for sale. We believe Mr. Wilkin sold more than he exposed, and he competed for and gained the prize for Leicester tups. Mr. Laurie also sold nearly all shewn by him at good prices. The show of black cattle was not so numerous as on former occasions, owing to many farmers being afraid of getting their cattle affected by the murrain, which has been prevalent in the district. Notwithstanding this, however, the cattle shewn were of a very superior description, and several purchases were made. We observed among other eminent agriculturists present, the following:—J. J. Hope Johnstone, Esq., of Annandale, M.P.; G. G. Bell, Esq., of Castleo'er; W. Younger, Esq., of Craiglands; James S. Wightman, Esq., of Courance; Mr. Stoddart, of Howshaw; Mr. Scott, of Castle; S. M'Adam, Esq., of Shalloch; Mr. Pagan, commission agent, from Liverpool, &c. Amongst the dealers present we observed our townsmen, Messrs. John Payne and James Kerr. The arrangements made for the accommodation of stock were well got up, and no confusion took place, from the circumstance of there being two shows, &c. on the same day. Mr. C. Stewart, of Hillside, who took charge of this department, and had the direction of the different matters connected with the shows, had everything done in an admirable manner. The following prices were given for stock during the day. Several of the tups, &c., which had gained prizes were sold; and, among others, those of Mr. Milligan, of Hayfield, who gained two first prizes for black-faced sheep, were sold at 4*l.* each. Cheviot tups, from 2*l.* to 7*l.* each; draft ewes, from 20s. to 24s. each. Leicester tups, from 50s. to 85s.; black-faced tups, from 25s. to 80s. A lot of 20 Highland cattle, three years old, were sold at 8*l.* each, and 12 Galloway two year old bullocks at 8*l.* 10s.

MR. DAINTREE'S ANNUAL SALE OF LEICESTER TUPS AND EWES took place on Monday last. The principal buyers were Mr. Ellis, of Warboys; Mr. Mosely, Somersham; Mr. Allpress; Mr. Tofts, Cambridge; Mr. Cawcutt, Boxworth; Mr. Dawson; Mr. Harradine, Needingworth, &c. The average price was 9*l.* 6s. But few pens of the ewes were sold.

IMPORTANT SALE OF RAMS AT HORKSTOW.—The important sale of twenty shearling rams, belonging to John Richardson, Esq., of Horkstow, in the county of Lincoln, took place on Tuesday se'nnight, at his fold farm. The weather was very unfavourable, and although, in consequence many were prevented from attending, the competition was nevertheless of a very spirited nature. Mr. Richardson also exhibited for the inspection of the visitors one hundred breeding ewes, with which he might challenge any breeder of rams in England. This plan ought to be more generally pursued by those who offer their rams for sale or hire, as the public would then have an opportunity of ascertaining the general character and merits of the flock. We could enumerate many instances to prove the superiority of this breed of Improved Leicesters, but it may be sufficient to state that Mr. William Richardson, of Great Limber, who has shown both rams, shearling wethers, and gimmers descended from this stock, has been one of the most successful exhibitors at the various meetings of the North Lincolnshire Agricultural Society. We subjoin a list of the prizes:—No. 1, by a sheep of the late Mr. D. Farrow's, 8*l.* 10s.; 2, by do., 11*l.*; 3, by Mr. Richardson's Magnum Bonum, 10*l.* 10s.; 4, by a sheep of Mr. Wright's of Bunney, 7*l.* 15s.; 5, by a sheep of Mr. Burgess's, 9*l.*; 6, by a sheep of the late Mr. D. Farrow's, 9*l.* 10s.; 7, by Mr. Richardson's Symmetry, 13*l.*; 8, by a sheep of Mr. Thorpe's, 8*l.* 10s.; 9, by a sheep of Mr. Wright's, 6*l.* 6s.; 10, by Symmetry, 7*l.* 15s.; 11, by Mr. Richardson's Fat Back, 10*l.* 15s.; 12, by a sheep of Mr. Wright's, 9*l.*; 13, by Symmetry, 9*l.*; 14, by Magnum Bonum, 6*l.* 10s.; 15, by a sheep of the late Mr. D. Farrow's, 15*l.*; 16, by a sheep of Mr. Wright's, 6*l.* 15s.; 17, by Fat Back, 9*l.* 15s.; 18, by a sheep of the late Mr. D. Farrow's, 40*l.*: 19, by do., 38*l.*; 20, by Magnum Bonum, 20*l.*—Total, 256*l.* 11s. plied with store short-horns cattle to-day, which were soon sold, there being no Scots at this market. Short horns sold from 4s. to 5s. per stone of 14lbs. estimated weight when fat. Fat Beasts from 8s. to 8s. 6d. per stone of 14lbs. sinking offal; fat Sheep from 7s. 6d. to 8s. 6d. per do.; shearling Sheep sold from 30s. to 44s. and Lambs from 15s. to 26s. each, mostly all sold.

MR. TEVERSON'S THIRTIETH ANNUAL SALE OF SOUTHDOWN SHEEP AT GREAT WILBRAHAM FARM, took place on the premises on Monday last. The sheep, to the number of 1,500, were penned on a tract of land at a small distance from the house. The company was not quite so numerous as usual; this, however, may be ascribed to Mr. Daintree's shew at Hemingford Abbots taking place on the same day. Those present, however, were nearly all buyers, and therefore the sale, which commenced about two o'clock, went on merrily till the close, when we believe that there was but one lot unsold, all realizing fair remunerating prices; the shearling ewes fetching from 27s. to 44s.; the stock ewes from 22s. to 46s. 6d.; the shearling wethers from 30s. to 37s.; ewe lambs from 20s. to 30s.; and wether lambs from 16s. to 27s. per head. The principal purchasers were the Duke of Manchester, by his agent Mr. Purvis, Lord Braybrooke, Sir St. Vincent Cotton, Gen. Grosvenor, and Messrs. Pemberton, Piper, Chalk, Stebbing, Goodchild, Claydon, Jonas Webb, Kelly, Carver, Cambridge and Jones. The sale realized on the whole about 2,250*l.*

MR. SMITH'S TUP-LETTING.—From the great success attained by Mr. R. Smith, of Burley, in the exhibition of his rams at the Oakham meeting yesterday, we have been induced to procure the report of his letting yesterday week. There were 55 rams (of different ages) offered, 51 of which were let at an average of 10*l.* 4s., many of which fetched very high prices; as a proof, the 12 sheep shown by Mr. S. at Oakham yesterday, were let at 18*l.* 10s. each—two of which were let for 70 guineas.—*Lincolnshire Chronicle.*

MAIDSTONE FARMERS' CLUB.—This useful society has engaged Dr. Robinson (whose lectures before the medical profession in Maidstone some four years since excited so much interest) to deliver a course of lectures on "chemistry and vegetable physiology as applied to agriculture."—*Maidstone Gazette.*

EXPORTATION OF ENGLISH STOCK TO THE SOUTHERN COLONIES.—The large ship *Sultan*, which left the St. Katherine's Dock on the 1st inst., for Port Philip, took out a number of respectable emigrants, who are about to settle in that colony, and a quantity of live stock for breeding, selected from the best breeds in England. Among them are six remarkably fine Lincolnshire bulls, six ewes, as many rams, a dozen pigs, and other animals, chosen by practical English agriculturists. The deck of the *Sultan* was covered with trusses of compressed hay, piled up a considerable height, and a great many trusses were stowed outside her bulwarks, over her stern, and other parts of the vessel, which appeared like a floating hay depôt as she proceeded down the river. There is a valuable cargo of London goods and other merchandise on board the Sultan, which conveys one of the richest freights that has yet left the Thames for Port Philip.—*Lincoln Gazette.*

STOCK SALES.

The sale of short-horned cattle and pigs of the Rev. J. Higginson, of Dishforth, near Thirsk, by Mr. Wetherell, of Durham, took place on Friday, Sept. 24; the following is a list of the animals sold, with the names of the purchasers.

Cows and Heifers.—Lot 1, Vestris, 58gs., Mr. Swann, York; 2, Ciceley, 31gs., do. do.; 3, Daisy, 76 gs., do. do.; 4, Amazon, 135gs., Mr. Agar; 5, Moss Rose, 41gs., Mr. Swann, York; 6, Miss Ramsden, 37 gs., Mr. Scott; 7, Quid, 64gs., Mr. Swann, York; 8, Lady Sprightly, 42gs., do. do.; 9, Carnation, 45gs., Mr. Grant, Duff, Aberdeen; 10, Rose, 32gs., Mr. Spurling, Ipswich; 11, Primrose, 40gs., Mr. Cox; 12, Mayoress, 41gs., Mr. Wiley, Bransby; 13, Alexandrina, 140gs., Mr. Swann, York; 14, Penthesilia, 70gs., Mr. Cox; 15, Miss Mathews, 40 gs., Mr. Swann, York; 16, White Rose, 36gs., Mr. Spurling, Ipswich; 17, Vacuna, 20gs., Mr. Newton; 18, Lady Annabella, 11gs., Mr. Swann; 19, Ruby, 26gs., Mr. Newton; 20, Vesper, 18gs., Mr. Agar.

Bull.—Lot 21, F. F. Fogo, 26gs., Mr. Deighton Winstone.

The well known character of Mr. Higginson's stock, which have obtained prizes at the Liverpool, Yorkshire, and other agricultural meetings, had its due effect upon their sale. The four young sows exhibited at Liverpool fetched £75, and three small ones, about three months old, fetched £45.

The sale of Mr. Wilson's short-horned cattle at Brawith, near Thirsk, took place on Saturday, Sept. 24, and realised the following prices:—

Cows and Heifers.—Lot 1, Prize Second, 27gs., Mr. Deighton, Winston; 2, Diamond, 33gs., Mr. Knowles: 3, Rosemary, 35gs., Mr. Robinson; 4, Chess, 26gs., Sir S. Crompton, Bart., Thirsk; 5, Quakeress, 42gs., Mr. Drury; 6, Young Lily, 40gs., Mr. Hinks, Thirsk; 7, May Rose, 60gs., Mr. Cromby, Aberdeenshire; 8, Ruby, 51gs., Mr. Walker; 9, Fashion, 50gs., Mr. Drury, near Plymouth; 10, Red Rose, 80gs., Mr. Watson, Walkingham, Notts; 11, Mary Maid, 31gs., Mr. Walker; 12, Miss Hornby, 32gs., Mr. Spurling, Ipswich; 13, Lady, 43gs., Mr. Whitaker, Burley, near Otley; 14, Velvet, 52gs., Mr. Maynard, Marton, near Ripon; 15, Moss Rose, 57gs., Mr. Watson, Walkingham, Notts; 16, Jane, 65gs., Mr. G. Duff, Aberdeen; 17, Well O'Day, 92gs., Earl Fitzwilliam; 18, Brawith Bud, 160gs., Mr. G. Duff; 19, Miss Hopper, 25gs., Mr. Crumby, Aberdeen; 20, Ranunculus, 26gs., Mr. Spurling; 21, Rosamoud, 60gs., Mr. Watson, Walkingham, Notts; 22, Violet, 58gs., Mr. Wetherell; 23, Green Mantle, 36gs., Mr. Drury; 24, Constantine, 36gs., Mr. G. Duff; 25, Maria Louisa, 34gs. Mr. Tiun; 26, Lady Day, 25gs. Mr. Hodgin; 27, Clara, 30gs., Mr. Wilkinson; 28, May Flower, 31gs., Mr. Jopp, Aberdeen; 29, Caroline, 32gs., Mr. Serjeantson, near Ripon; 30, Jemima, 25gs., Mr. Hutchinson, Aberdeenshire; 31, Romp, 16gs., Mr. Robinson; 32, Bess Buss, 25gs., Mr. Hutchinson; 33, Cousin Betty, 24gs., Mr. Serjeantson.

Yearling Heifers.—Lot 34, Betty Flos, 51gs., Mr. Hutchinson; 35, Gipsy Queen, 20gs. Mr. G. Duff; 36, Carmine, 66gs., Mr. G. Duff; 37, Rosa' 71gs., Mr. Knowles; 38, Victoria, 40gs., Mr. Parkinson, Ley Field, Ollerton; 39, Madam Vestris, 66gs. Mr. Parkinson; 40, Nerissa, 43gs., Mr. Knowles; 41, Sybel, 43gs., Mr. Jopp; 42, Young Lady, 40gs., Mr. Drury; 43, Lily of the Valley, 18gs., Mr. Wilson; 44, Miss Newton, 21gs., Mr. Wilson.

Heifer Calves.—Lot 45, Alexandrina, 23gs., Sir S. Crompton, Bart.; 46, Snowdrop, 60gs., Mr. Lane Fox; 47, White Rose, 42gs., Mr. Lane Fox; 49, Judy, 18gs., Mr. Hutchinson.

Bulls.—Lot 50, The Captain, 27gs., Mr. Gamble; 51, Young Pilot, 21gs., Mr. Harrison; 52, Robin O'Day, 44gs., Mr. G. Duff; 53, Valentine, 30gs., Mr. Mauleverer, near Stokesby; 54, Major, 25gs., Mr. Chapman; 55, Young Sir Walter, 100gs., Mr. Cromby; 56, Mendoza, 21gs., Mr. Bankes.

Bull Calves.—Lot 57, Red and White, 29gs., Mr. Greetham; 58, Roan, 15gs., Mr. Strafford; 59, Roan, 21gs., Mr. Strafford; 60, Red and White, 10gs., Mr. Nicholl; 61, Red and White, 13gs., Mr. Kay; 62, Roan, 23gs., Mr. Strafford.

The bull Sir Thomas Fairfax, 155gs., Mr. J. Parkinson, Ley Field, and W. J. Booth, Cotham, near Newark. This bull having been entered for exhibition at the Highland Society's Show, at Berwick, was sold not to be delivered until the 1st October; the venders will of course receive the prize, should any be awarded to him at the Berwick meeting.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF SEPTEMBER.

The month of September has again tested the admirable principles of the existing system of protection legally afforded to our home agricultural pursuits, for in no manner has it been found deficient, excepting in as far as the treasury, and partially the farmers, are interested; the corn duties paid since our last number, on an immense quantity of foreign corn and flour, having been far too low for effecting any material augmentation in the public revenue. For the interests of the great body of consumers, however, nothing can be more admirably adapted than are the existing corn-law regulations; of which fact we have latterly had so much practical experience, and by which many serious inconveniences to the community at large have been, in a material manner at all events, alleviated, if not entirely obviated. Until within the last six weeks a more unpropitious season for the crops generally, has seldom indeed been experienced in this country; and, for a time, very serious apprehensions were entertained for the safety of the produce itself of the fields of every description. That damage has already been done to all descriptions of grain in the fields, admits not of any doubt; for that part which was early in the season secured, comes not away freely from the straw, and in most instances it is also inferior in weight and quality. The most fortunate alteration, however, which occurred in the weather during the latter part of August and the first week in September, enabled the farmers in several districts to clear their fields of produce, in general in excellent condition, at all events, and a larger yield from the straw hereafter than has been the case to this time, may be confidently calculated on; though, in quality, the change in the weather came too late to admit of any material improvement occurring in this respect, more particularly in the article of wheat. Under the graduating scale of duties, and without any attempt to force up the average prices for the purpose of reducing the duty on wheat when entered for home consumption, the good old rule of supply and demand has regularly caused such an advance in the value of wheat of British growth, as has rendered the entry of all the foreign wheat under lock practicable, at the almost nominal public charge of 1s. per quarter. To the great body of consumers this has been a most important advantage, originating out of the corn laws; although to the revenue, and to the British and Irish wheat producers, similar benefits cannot be attributed to the details of the existing corn laws, which are so far open to very considerable improvements in the mode of working them, the principles of them, however, remaining the same as they are at present. The revenue has latterly been injured, in no small degree, by the nominal duty which has been charged on the grain and flour of foreign production, entered under the corn laws for home consumption; and it is only common justice to the British and Irish grain growers, that the proprietors of foreign grain consumed in the United Kingdom should pay a moderate duty on their produce when entered here for home use. It is anything but correct to fancy that the British consumers would eventually pay, in enhanced corn prices, for this increased duty; for it could not, by any possibility, have the slightest influence on the prices of grain here, but, like freight, insurance, and other expenses of importation, it would be paid by the foreign land proprietor for the use of our markets. The British corn merchant, in making his purchases abroad, with a view to the British markets, would cause the duty to be deducted from the cost price, as he now does all the other charges of importation, else his purchases would be unprofitable; and thus foreigners would pay their due proportion of our heavy taxes for the advantages afforded to them by a profitable market for the sale of their agricultural produce here. We are perfectly persuaded that the minimum duty on wheat should never be under 5s. per quarter, to take effect when the average price of twelve weeks, instead of six, as is the present practice, should be 65s. per quarter; and no bonding of foreign grain should be allowed until, by a decline in the average prices of wheat, the duty be 15s. per quarter and upwards. These alterations in the details of the existing corn laws would render them as nearly perfect as anything human can well be; would improve, in a very material degree, our revenue, at the expense entirely of the foreign agricultural interest; would render more difficult all attempts at returning fictitious prices for fixing the duty; and, above all, would prevent our home producers of wheat from being met at this season of the year with an overwhelming supply of foreign wheat, entered for home consumption on the payment of only nominal duties towards our public expenditure. By alterations of this description, the supplies of grain in all our large markets of consumption would be much more on an equality with the demand than they are under the present system, and prices would be rendered more steady than they can be so long as hundreds of thousands of quarters of foreign wheat can, within one week, at nominal duties, be poured into the different markets for sale, as has been the case in the progress of the month which has now been brought to its conclusion; and so long as the chance itself of a million of quarters of foreign bonded wheat being suddenly thrown into consumption, is permitted to press itself on the opinions and the operations of the proprietors and growers of British and Irish agricultural produce, markets never can be regularly supplied, nor can the intrinsic value of grain be accurately ascertained, until some alteration or other be effected in the details of the corn laws, capable of producing these most beneficial and important results. For the promotion of the best interests of the community they are otherwise admirably contrived; for when our markets are inadequately supplied with grain, they apparently possess the power of self-motion. They reduce the duty, as they did last month that on wheat, when the demand is greater than the supply, thus protecting the interest of the consumer; and when the supplies exceed the consumption, they immediately give protection to the agricultural interest at home by enhancing the duties payable on foreign grain when entered for home consumption. Two alterations in their details, as we have already stated, are only wanting to render them just towards all classes of British society. The minimum duty should be raised to 5s. per quarter, for the sake of our pub lic revenue; and an alteration should be made in our present system of bonding, by which the farmers of the United Kingdom may be protected from the immense losses to which they are occasionally subjected from overwhelming supplies of foreign grain being liberated in one week, as was the case in the middle of last month, and thrown into the markets for sale at the time, too, when our farmers begin to forward the produce of the harvest for sale, with the view of paying taxes, rent, tithes, and various descriptions of agricultural expenses. This is a great injury done to our farmers, and demands an immediate remedy being applied to it. It is, at the same time, not of any advantage to the consumer; for what he may gain in cheapness occasionally by these excessive foreign supplies, he most certainly loses by the advance in prices which short supplies afterwards occasion, originating in this cause alone. But the remote advantages which must eventually arise from the operation of the corn laws, are even more important than their immediate ones. Through their protective influence alone can agricultural improvements be prosecuted throughout the United Kingdom. There are many millions of acres of land at the present moment still in a state of nature, and consequently utterly useless to mankind. By the means of capital, industry, and agricultural science, an immense extent of land may eventually be drawn from the wilderness, and converted to purposes useful to the people; but the infancy of improvement in agriculture, like every thing else, must receive national protection, else it cannot be effected; and hence the corn laws become absolutely necessary to those who have the means and the inclination to convert useless into useful lands. Besides these uncultivated districts there is not one acre of land amongst the fifty millions of acres now under tillage, of some description or other, which may not, as the science of agriculture progresses, be rendered doubly valuable; but legal protection is also necessary to the production of this most beneficent result. To employ the people in improving and in cultivating our own fields, is the duty of every well ordered government; and with this view to improve in their details, and to maintain in their principles, the existing corn laws, is the duty of her Majesty's ministers. This is a far more natural plan for the healthy and productive employment of the British people, than to engage them in any description of manufactures, with a view to a barter trade with foreign nations, even were a barter trade in goods and grain possible, which every day's experience proves to be impracticable. To obtain food for his labour is the lot of the horse, but it is rather impertinent to propose the same system of mutual labour with foreigners to a free-born Englishman. To render the duty on foreign grain when imported here for consumption, of the same amount in all times and under all circumstances, must produce the same results which would attend the actual repeal of the corn laws; for whatever our prices may be, whether cheap or dear, foreign grain would be sent forward into our markets, and in a most material degree it would interfere with agricultural improvement, and with the consumption of grain grown within the United Kingdom if the duty on importation be a fixed one, or if the corn laws themselves be repealed. But here the mischief would not end, for it would have a most injurious influence on productive employment generally, and on the value of wages themselves. That the foreign proprietors of agricultural produce consumed in the United Kingdom would not receive manufactured goods in payment for it, the experience of the corn trade since the passing of the present corn laws took place, most sufficiently establishes; and the precious metals must therefore be resorted to, as has universally heretofore been the case, as the medium of remittance to those states from whence food is imported. That the commercial distress which at present exists so very extensively had its origin mainly in the exportation of specie in exchange for foreign grain, which circumstances have rendered necessary since the year 1836, admits not even of contradiction; and we fear much that, during the ensuing corn season, similar causes must, to a certain extent, produce similar effects, and add materially to the depression under which commerce and manufactures now labour. The exportation of the precious metals naturally makes money scarce, and raises the interest annually to be received for loans of it. Dear money limits all enterprising transactions, and thus productive labour becomes difficult to be obtained by all the industrious classes of society, even at a large reduction in the value of the wages paid for it. Unfortunately the state of the wheat crop this season will render a farther importation of that article necessary, and that to some extent before the conclusion of the present corn season. This will cause a farther drain on the precious metals in exchange for foreign food, and materially increase the commercial and manufacturing distress, at present too generally and too truly complained of. But it is occasioned by the elements, and could not be averted by any human wisdom. It will produce, however, all the evil consequences which would attend an actually free trade in food with foreign nations; but next year may set a limit to the distress which the deficiency in the wheat crop of 1841 must from necessity create, whilst the evils attending an actually free corn trade at all times would annually increase until they produced general bankruptcy. Had the weather favoured the home growth of grain, and rendered foreign supplies unnecessary during the last five years, many millions sterling would have been saved to the community. All the money which unfortunately has been paid away during that period in exchange for foreign food would have been divided amongst our farmers and land proprietors, and would have now remained in actual circulation amongst the community. Fifteen millions sterling at least would have been added to the capital now employed in agricultural improvements and in commercial and public undertakings, and productive employment would have been proportionably increased amongst our artisans and manufacturers. The home consumption of necessaries and of luxuries would have added to the quantity of labour, and would consequently have improved the wages paid for it; but unfavourable seasons have deprived the inhabitants of the United Kingdom of these most beneficial and important advantages. Perseverance in tillage at home, however, must eventually, and perhaps more speedily than can at present be contemplated, spread contentment and gladness through the land; whilst to depend on foreign nations for food can only produce unheard-of calamities. That we can, in favourable seasons, produce at home food perfectly sufficient for the population, is a fact established by experience, and placed beyond all doubt; and that our own soil possesses capabilities in the greatest abundance for raising three times the quantity of food now drawn out of it, it is equally satisfactory to know. Such brilliant prospects of realities must not be sacrificed to the wild notions of theorists whose plans are Utopian no doubt, but unfortunately impracticable. Bad seasons have occurred before, and in the course of nature must occur again; but the evils which attend them can always be, in part at all events, remedied by the corn laws, were they only amended in their details to that extent which we have already pointed out; whilst an actually free corn trade would, before many years experience of it could pass away, have the effect of causing universal misfortune. It is most fortunate, however, that the conclusion of the harvest has been better than its commencement prognosticated; and under these improved circumstances it is a great hardship, as we have already stated, that one million and a half of quarters of foreign wheat should have been entered for home use, at this time of the year too, at the nominal duty of 1s. per qr. Twice the quantity, spread over the year in equal proportions, would not have been nearly so injurious to the agricultural interest, for our farmers now must send large quantities of the last crop to market, whatever may be the value of wheat; and prices probably will continue to decline until the turn of the year, when the farmer's supplies of wheat will be less large than they now are, and another successful attempt will be made again to render the corn duties nominal during the progress of the next spring, although, in the meantime, the wheat duty may, and probably will, rise before the close of this year to a prohibitory rate, and our farmers suffer by this unnatural depreciation in the value of their property. The information received from the north of Europe since our last publication, has, thanks to steam navigation, been as usual in due course of post. Throughout Prussia and Poland, the chance of a perfectly free trade in corn with Great Britain, or even one of fixed duties at all times, had given universal satisfaction to the land proprietors. In his Prussian Majesty's dominions the joy felt was extreme, for an increased value in land there would be the natural result of the contemplated alteration in our corn laws; and vast districts of at present useless land would be gradually brought under cultivation, if a money market could only be opened for the additional consumption of its produce, a barter trade betwixt the wheat proprietor and the British manufacturer being considered there impracticable, as we have so repeatedly had occasion to demonstrate. In Poland, and generally in Prussia, farmers do not generally exist, nor are rents for land much known. The land proprietors employ their serfs, boors, and slaves, in the cultivation of the soil, and support them with a small portion of the worst qualities of food, produced by their labour. The value of the fee simple of the fields in Prussia does not average 5*l.* an acre, and that of Poland is less than 3*l.*, and therefore the nominal rent is high at 3s. to 5s. per acre. The conveyance of wheat from the interior of Poland and Prussia to Dantzig, Konigsburgh, and the other shipping ports in the Baltic sea, is fully equal in expence to that of its original growth; and yet this conveyance expence cannot under any circumstances exceed from 3s. to 8s. per qr. free on board ship, in which state, therefore, it pays the Prussian and Polish land proprietor exceedingly well when shipped at 20s. per qr. free on board in any of the Baltic ports. An actually free trade in grain, therefore, even at a fixed duty, must be ruinous to the British agricultural interest, and generally to the manufacturers themselves; for no limit could be placed to the productive powers of Poland and the north of Germany, where there are still boundless tracts of uncultivated lands, and from whence grain in immense quantities would be poured into this country, whatever might be its value, and at whatever rate of fixed duty the legislature might permit its importation. Even under the existing laws we can never want Baltic wheat in the greatest abundance when necessity requires it, as has been sufficiently proved by the large importation which has latterly taken place; and the benefit of these laws is perfectly established by the fact, that farther shipments abroad ceased so soon as it was obvious that the duty in Great Britain and Ireland would soon again become protective to our agricultural interest: nor can the trade be revived until the foreign proprietors of grain submit to such a depreciation in value, as may offer a chance of profit to the British importers of it to be entered here before another crop can be brought forward into general consumption. The consequence of cheap provisions here, created by a farther excessive importation of foreign food, must be attended by a farther ruinous decline in the wages of labour, and tend most materially to increase distress, already too prevalent amongst the manufacturing, commercial, and labouring classes of society. It is not for us to point out to merchants foreign markets for the consumption of their goods. It is enough for us to assert again, that an increased importation of foreign food cannot increase the exportation of British manufactures to those kingdoms and states from whence the foreign supplies may be received; and therefore that prosperity cannot be restored to their commercial pursuits by the repeal of or by any modification in the principles of the existing corn laws, although an alteration in their details is absolutely necessary to the general well-being of British and Irish society. From the corn markets in the Black and the Mediterranean seas, the intelligence received here during the last month, has not been interesting. The corn markets were beginning to be well supplied with grain of the last crop, and wheat in particular was not much in demand. Had our ports remained open for importation at only moderate duties however, a large quantity of wheat would have been forwarded from those seas; but the chance of this event at the latest dates was so doubtful, that speculative purchases were made only at low prices, and no very extensive importations can be made from these parts therefore, unless a material alteration should occur in the state of the corn trade generally in the United Kingdom. For the real and best interests of the British empire, the smaller the necessity is for importing foreign food the better. The continental field labourers cannot afford the use of British manufactures, let their produce be large or small—be its value cheap or dear; and the consumption by the land proprietors must at all times be nearly to the same amount, whether our laws permit or prohibit the use of their produce in the United Kingdom. To produce at home all the necessaries of life—to maintain the people in food and work at home, is the true wealth of nations; for in the present state of civilized society, this is the only way by which money can be kept in useful employment amongst the industrious classes of society, whether they be engaged in agricultural, in commercial, or in manufacturing pursuits.

The intelligence communicated from the United States of North America since our last number, is to the middle of September, at which period grain and flour continued to be forwarded to Europe in considerable quantities, and improved prices had been the natural consequence. As in Europe, so likewise in America, the quotations furnished from Mark Lane formed the pivot on which the value of agricultural produce revolved; and the land proprietors were, in a particular manner, anxious that the grain markets throughout the United Kingdom should be at all times and under all circumstances thrown open for the sale of their agricultural produce, which they assure us can be so greatly increased as to render field cultivation here entirely unnecessary. Indeed, if we can believe all we hear on this subject, they are prepared to grow as much grain as can be consumed by the inhabitants of Europe themselves. At a meeting in Manchester last month, a Mr. Curtis stated that, in his part of America, the banks of the Ohio, capabilities existed for raising not only grain and fruit, but animal food itself perfectly sufficient for our comfortable support, and also at much cheaper rates than similar articles can be produced here. The American orator, therefore, called on the British people to abrogate the corn laws entirely, and offered us in return for this concession, an exchange of the surplus agricultural produce of America for British wares and manufactures. In fact, he tells the people of England to work in their mines and before their furnaces, and that the people of America will feed them for their toil. The Americans no doubt are perfectly prepared to undergo the peaceful, pleasant, and healthy labours of the fields, and John Bull is to become their operative labourer. The slaves in the Peruvian silver mines, and the hackney horses in the streets of London, obtain their living on terms equally as good as those which America now wishes England to adopt, but the artizans here are too widely awake to their real interests to hearken to dogmas so absurd. They are fully aware that as tillage decays at home, the number of labourers in other departments of industry must be increased, and their wages proportionably decreased, and accordingly the anti-corn law lecturers have not as yet been able to get the steam up on this subject. From America Englishmen are willing to take provisions when circumstances require their importation, but they will never join any cabal for oppressing farming at home, on the prosperity of which the rates of their wages very mainly depend.

The Barley trade, as usual, has attracted very little interest since our last review of the state and prospects of the corn trade, nor can any material alteration in this respect occur in it, so long as its cultivators remain under the disadvantages which universally take their origin in an oppressive system of taxation. This is most unfortunately the position in which the barley grower is placed. All his energies are paralysed, and his operations are restricted, by the heavy duties which are imposed on manufactured barley. Under the existing system only a limited quantity of malt can be used, and the farmer is thus obliged to restrict his barley growth to somewhere about the supposed consumption. The malt duty, for instance, confines the consumption of malt by the public brewers to less than four millions of quarters annually, whilst the reduction of the malt duty to one shilling a bushel would render the consumption of this article at least two-thirds more than its present amount. The beer extracted from four millions of quarters of malt is but short allowance indeed, when divided amongst thirty millions of human beings; indeed, the fact is, that several millions of the people have not the means, under existing circumstances, to use beer at all. The ministers are most naturally anxious to raise the revenue to a level with the public expenditure, and we are morally persuaded that no better plan can be found for the production of a benefit so important to the strength and happiness of the empire, than in reducing heavy duties on all articles by which consumption is restricted. More revenue would be raised at one-half of the present charge on malt, because the public would consume twelve millions of quarters instead of four; and the profit which would arise from the growth of the additional quantity of barley required by the reduction of the duty, would do far more than pay the expense of the additional consumption of beer. To the agricultural interest a remission of duty on malt would be of the utmost importance; for to produce the necessary quantity would require from one and a half to two millions of acres of sandy lands to be converted into barley fields, which, under any other description of cultivation, now hardly pay agricultural expenses. With a field of this importance for giving productive employment to an additional number of agricultural labourers, it is surely not necessary to incur the expense of transporting so many thousands of them as we annually now do to the colonies, there to be worked in the cultivation of land far more savage than any waste lands are at present to be found in the United Kingdom. To act justly towards the agricultural interest in this respect, is only doing justice to all classes in the community. The revenue suffers because one quarter of the people cannot afford the use of beer, and the health of many thousands is injured by the consumption of adulterated and spurious beer. Lands remain uncultivated and consequently useless, in consequence of the heavy manner in which malt is taxed, which otherwise would tend considerably to alleviate these monstrous evils. Abundance of barley would be produced by the farmers was it not for excessive taxation, and to them, at least, cannot be attributed the high price and generally bad quality of beer. When the duty on malt was 35s. per quarter, it never paid three millions sterling into the treasury within one year. Two years after the Duke of Wellington's administration reduced the duty to 20s., nearly six millions of quarters of malt were legally manufactured. That duty within the last three years has been again raised, and the natural consequence has been the reduction of the quantity of barley used in malting by about one-fifth of its previous amount. In this channel the Chancellor of the Exchequer has a most legitimate road to an increased revenue, and that too without laying one pound sterling more on the great body of consumers. The additional wealth which an additional growth of barley must create, will do far more than pay for tripling the present consumption of beer. The reduction of the malt duty will spread happiness generally also amongst the great mass of the *at present discontented population*, and may eventually go far to again restore the revenue to a healthy state. An alteration should also be made in the useless and absurd restrictions which the Excise regulations at present impose on the malting trade. The malt duty should be charged on the barley itself when it is delivered into the malthouses. No duty could be evaded by this change, and the maltster would be enabled to use his science and talents in the best manner for the production of the best qualities. He would manufacture according to the quality of the barley in his stores and the heat of the weather. At present he is confined to fixed rules—whether the barley be grown in the north or in the south—whether the climate be warm or cold. Under this system of restriction it is not in his power always to produce the exact qualities which his consumption requires, nor is the revenue rendered more secure than it would be under more liberal legislative enactments. In short, the whole system of the malt trade demands the best attention of Parliament. British agriculture, however, also suffers in another great channel for the consumption of barley, for the English distillers are even more harshly used by the distillery laws than the maltsters themselves are by those of the excise. For the sake of public morality, a material change should be made in the laws which now regulate distillation throughout the United Kingdom. The duty charged should be made uniform in the three portions of the empire, and the standard should be fixed at 4s. or 5s. per gallon. A charge to this extent would go far to suppress smuggling, which in England has for years now been prosecuted to an enormous extent, and which is the origin of a great number of crimes. The suppression of smuggling, therefore, would be attended by the suppression of an extreme vice amongst the people; and to render the duty on home-made spirits moderate, is a certain and only way to produce this most benevolent effect. Probably the quantity of illicitly-imported spirits annually is not much under ten millions of gallons of the worst description, and the morals and health of all engaged in this most nefarious trade are contaminated by its prosecution. To render the duty paid in England moderate, would instantly render the smuggler's trade unprofitable, and would soon afterwards put it down entirely. The revenue derived from home-made spirits would be materially increased by reducing the duty paid in England to one-half of its present amount; and what may appear to be a paradox, the consumption of spirits generally would be less than it is at the present moment. Double the quantity of wholesome home-made spirits—the pure extract of Sir John Barleycorn—would be consumed, and not one gallon of foreign illicitly-imported spirits would, were the English duty only rendered moderate, be put into consumption. The great virtue of temperance would be placed on a sure foundation; and the gifts of Providence would be used with moderation. To the agricultural interest also the suppression of smuggling would be an important advantage, in as far as it would throw open a demand for at least half a million of qrs. of British and Irish barleys more than the present system requires. The trade of the rectifier also should be amended; and if this could be done effectually, a considerable sum of money now annually paid for foreign spirits, legally imported, would be saved by the community. For some purpose which is perfectly inexplicable, British rectified spirits cannot be sent into consumption unless they be 17 and more under proof. For this there is no well founded cause. Foreign and colonial spirits, Irish and Scotch whiskey, are permitted into general use without any limitation to strength, and it is difficult to understand why British-made brandies and gin should not be admitted on similar terms. If British-made brandy was encouraged according to its merits, the money paid for foreign brandy would be annually less, and the health of the people would undergo a very material improvement. We have frequently had an opportunity to call the attention of our agricultural readers to the rapid manner in which rectifiers are improving the quality of home-made brandy. In the large distillery in King's-street, Snow-hill, Messrs. Stokes and Co. already are manufacturing brandies much more wholesome, and of fully as good flavour as the great portion of legally-imported brandies are; and, did the law only permit these gentlemen to use their skill and talents in their art, by allowing them to send their spirits into consumption at that strength which would best suit the taste of the customer, they would immediately rival in quality the best French brandies and render any further supplies of them perfectly unnecessary—saving thus to the country a large sum of money annually. In the same manner as British whiskey has nearly superseded Dutch duty-paid Geneva, so would British-made brandies supersede French brandies legally imported, did the law only allow the British rectifier to use his judgment in the prosecution of his scientific profession. This is a most excellent season, at all events, for making the experiment; for, as malting barley will be scarce, and consequently dear, so in proportion must distillers' barley be plentiful, and its value moderate. With an improvement in the laws which regulate the operations of the distiller and of the rectifier, this highly valuable branch of British industry may again assume its former prosperity, and a fair market may be opened for the consumption of the present barley crop—rendered generally inferior by the unfavourable state of the weather during the late summer months.

The supplies of oats received in all the great markets of consumption throughout Great Britain during the month of September, have been about equal to the demand, and very little speculation has occurred in them during that period. Of all descriptions of grain, oats are now the most steady, both in value and in consumption; the improvement in them since our last publication, not having exceeded from one to two shillings per qr., and the protective duty remaining at that point which has rendered foreign supplies of them unprofitable, because they have not been required by any deficiency in our home deliveries. It is to the progress already made, and now making in the science of agriculture in Ireland, that we must alone attribute this most healthy state in which we now find the oat trade; and this highly important circumstance has its origin chiefly, if not entirely, in that most necessary protection which agriculture in general obtains from the existing corn laws—forming as it does, a most powerful argument in favour of their being rendered permanent. To abrogate these laws would materially affect field labour in Ireland, and would entirely put an end to farther agricultural improvement in that highly valuable portion of the United Kingdom. As matters are at present, the money paid for the consumption of oats is distributed amongst her Majesty's agricultural subjects, and remains within her empire in active circulation amongst the industrious classes of every description; but were these laws repealed, instead of drawing the greater part of our consumption of oats from Ireland, imported here under the British flag, and employing thousands of tons of British shipping, and many thousands of British seamen, our markets would be filled with oats from the opposite ports, rivers, and harbours in the continent of Europe, and they would be introduced here entirely in foreign bottoms, navigated by foreign seamen. The freights would be taken back in specie alone, and in the same manner would the grain itself be paid. It is only necessary at any time to observe at Blackwall, the passing up the Thames of foreign ships universally loaded with produce, and the passing down of the same ships almost always in ballast, to be morally convinced of the impossibility of a barter trade with any of those European states wherein grain is the chief article of their production. Of oats we grow at home abundance for the consumption, and, by the cultivation of morasses, the banks of rivers and of lakes, and various descriptions of waste lands in Ireland, we have ample means to increase the annual crop of this article, in proportion to the increase of its consumption at all events ; and, so long as the law protects the oat cultivators, there is little chance indeed of our requiring any foreign aid in this article. The growth of it this season is larger than the last one was in Ireland, and although the quality is not so good as it generally is on the average of years, still quantity will make good this deficiency during the coming oat season, and will render foreign supplies perfectly unnecessary.

Of the potato crop, the reports received from every quarter are most favourable and cheering, and prices consequently are already becoming extremely moderate. This article yields in importance alone to that of wheat, but in general utility we doubt much whether it be not superior to any other description of agricultural produce. At the present moment, and with our present prospects, this is a most fortunate circumstance, for it removes all apprehension of evil consequences resulting from the deficiency which exists in the present wheat crop. The consumption of potatoes is annually on the increase, and the quality of them is annually improving. Should any unnatural advance occur in wheaten bread, the moderate prices at which potatoes must continue during the present corn season must very materially correct the evil, and eventually the prices of wheat will be rendered moderate by this cause. There is therefore no just reason whatever for unfavourable prognostications respecting the winter support of the population, for, although unfortunately too much individual distress does prevail at present, and probably must continue to prevail for some time yet amongst them, still it is most satisfactory to know that the abundant crop and fine quality of potatoes must tend in a material degree to keep the value of provisions within the means of the consumers, and to alleviate their wants until commerce again assumes a more healthy state, and until manufactures again become a profitable and great channel for their productive employment. The dullness of trade at present originates chiefly in the transmission to foreign nations of money in exchange for foreign food ; and any alteration in the corn laws, which would perpetuate the evils of using foreign food for the consumption of the British people, must in a material degree tend to perpetuate the depressed state of trade ; and the too prevalent want of productive employment, now complained of amongst the manufacturing labourers, and amongst, indeed, all classes employed generally in commercial pursuits. Time, however, will remove these commercial inconveniences, and prosperity will again arise, partly indeed out of the events now so generally complained of, for they must open the eyes of the people to the vast benefits which they universally reap from the general prosperity of agriculture throughout the United Kingdom, and to the injury which large supplies of foreign food very naturally entail on them when the elements render its importation necessary.

CURRENCY PER IMP. MEASURE.

SEPTEMBER 27.

		Per Qr.				Per Qr.	
WHEAT, Essex and Kent, red	60	62	68	White	60	72	74
Irish		56	60	Do.		62	64
Old, red	72	74	76	Do.		72	80
RYE, old		34	36	New		36	38
BARLEY, Grinding 30 34 Malting		36	40	Chevalier		36	38
Irish		27	28	Bere		25	28
MALT, Suffolk and Norfolk		60	62	Brown		50	54
Kingston and Ware		60	62	Chevalier		60	63
OATS, Yorksh. & Lincolnsh., feed		24	26	Potato		27	28
Youghall and Cork black		23	24	Cork, white		24	25
Dublin	21	22	24	Westport		24	25
Waterford, white	18	20	23	Black		22	23
Newry		24	25				
Galway	15	17	20				
Scotch feed		25	26	Potato		27	28
Clonmel		23	25	Limerick		23	25
Londonderry		23	24	Sligo		22	23
BEANS, Tick, new		38	42	Old		42	48
PEAS, Grey		36	38	Maple		36	38
White		38	42	Boilers		40	44

FLOUR, Town-made 62 — Suffolk — 50 pr sk. of 280 lbs.
Stockton and Norfolk, — 50

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	62	66	70			
Hamburg		56	60			
Rostock		60	64			
BARLEY		22	25			
OATS, Brew	19	22	24	Feed	14	16
BEANS	28	30	32			
PEAS		27	30			
FLOUR, American, per brl		38	—	Baltic	36	—

IMPERIAL AVERAGES.

	Wheat.	Barley.	Oats.	Rye.	Beans.	Peas.
Week ending Aug. 13th ..	72 5	35 11	23 6	36 3	42 1	43 1
20th ..	74 7	37 0	24 7	38 3	44 3	46 8
27th ..	76 1	39 7	24 5	40 0	43 9	48 5
Sept. 3rd ..	74 1	39 1	24 3	40 1	44 0	45 4
10th ..	71 2	39 10	23 6	39 1	44 8	44 8
17th ..	64 8	39 2	23 6	37 11	44 10	47 9
Aggregate Average of the six weeks which regulates the duty	72 2	38 5	23 11	38 7	43 11	46 0
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	2 8	4 10	12 3	12 6	5 0	1 0
Do. on grain from British possessions out of Europe	0 6	0 6	2 0	0 6	0 6	0 6

Account shewing the Quantities of Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 5th Sept., 1841 ; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.			Quantity entered for consumption.			Quantity remaining in warehouse.		
	qrs.	bush.		qrs.	bush.		qrs.	bush.	
Wheat, from British Possessions	39553	7		43020	2		906	7	
Peas, from do.	4764	6		4404	5		388	1	
Indian Corn, do.	....			....			....		
Wheat, foreign	220877	0		7770	6		905123	3	
Barley, do.	34640	3		3529	2		73246	7	
Oats, do.	16446	7		5	3		58011	7	
Rye, do.	....			....			2710	4	
Peas, do.	6758	5		2349	4		50211	4	
Beans, do.	41732	7		2067	1		123001	6	
Indian Corn, do.	0	1		0	1		3006	0	
Buck Wheat, do.	0	1		0	1		....		
	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.
Flour, from British Possessions	241344	3	20	282875	0	26	9107	1	26
Flour, foreign	32105	1	7	901	1	25	349822	3	18

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Sept. 24th, 1841.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, Sept. 25th, 1840.	s.	d.
Wheat	64	8	Wheat	64	1
Barley	39	2	Barley	36	2
Oats	23	6	Oats	24	10
Rye	37	11	Rye	37	7
Beans	44	10	Beans	45	3
Peas	47	9	Peas	42	7

PRICES OF SEEDS.

Sept. 27.

The trade in Seeds was by no means animated, still former prices were supported; indeed Canary was the turn dearer, and in improved request. With Tares we were liberally supplied, and before any progress could be made in sales, an abatement of 6d. per bush. had to be acceded to.

Linseed, English, sowing	54	59				
Baltic	—	—	crushing	48	54	per qr.
Mediter. & Odessa	50	54				
Hempseed, small	40	45	large	48	50	
Coriander	10	16	old	16	18	per cwt.
Mustard, brown, new	10	14	white	9	13	pr. bush.
Trefoil	16	28				
Rapeseed, English new	36*l.*	40*l.*				
Rye Grass, English	30	42	Scotch	18	40	
Tares, winter	—	—	New	8	9	
Large, foreign	—	—				
Clover, English, red	—	—	white	—	—	per cwt.
Flemish	—	—	do.	—	—	nominal.
New Hamburgh	—	—	do.	—	—	
Old do.	—	—	do.	—	—	
French	—	—	do.	—	—	
Canary, new	90	95	old	100		
Carraway, old	50	52	new	48 49	52	

PRICES OF HOPS.

BOROUGH, Sept. 27.

There has been a very active market for new Hops, which have come to market very plentifully, and been taken off very rapidly, the sample boards being cleared as soon as they are replenished. Mid. Kent has advanced, but other qualities of the new crop being in good supply, we quote a trifle lower. The duty is 150,000*l.*

	East Kent.	Mid. Kent.	Weald of Kent.	Sussex.	Farnham.
	s. s.	s. s.	s. s.	s. s.	s.
Bags, 1836	Nominal	—	—	—	—
Pocks. 1836	—	—	—	—	—
Bags 1837	None	None	None	None	—
Pocks. 1837	—	—	—	—	—
Bags 1838	Nominal	—	—	—	—
Pocks. 1838	—	—	—	—	—
Bags 1839	80 .. 95	80 .. 95	80 .. 95	80 .. 95	—
Pocks. 1839	—	—	—	—	—
Bags 1840	110 .. 115	100 .. 115	100 .. 115	100 .. 115	—
Pocks. 1840	—	—	—	—	—
Choice do.	112 .. 126	112 .. 126	112 .. 126	112 .. 126	—
Do. 1841	—	140 .. 180	120 .. 145	115 .. 130	—

POTATO MARKET.

SOUTHWARK, WATERSIDE, Sept. 27.

The potato trade has now commenced at the waterside. In resuming our reports for the present season it may be stated, that the arrivals up to the present time have been as follows, viz., 110 barges from Kent and Essex, three cargoes from Jersey, and three from Devon and Cornwall. The estimated quantity of the whole being about 2,500 tons. They are chiefly white Potatoes, and the prices various, averaging from 45s. to 70s. per ton. The supplies to the metropolitan markets from the farmers in the neighbourhood of London have been very abundant, and aided by the plentiful supply of vegetables of all kinds, has caused sales of late to be heavy for inferior samples. We shall now continue to report, as usual, the arrivals and current prices from week to week with the utmost possible accuracy, giving to those interested in the growth of Potatoes the best and fullest information respecting the markets, which may be relied on. Shipping has commenced in the northern districts, and some arrivals are shortly expected. The weather during the last few days has been very wet, and if it continues will prevent the farmers from taking up so freely for the London markets, and cause sales to be brisker at the waterside.

WOOL MARKETS.

BRITISH.

Sept. 27.

	s.	d.		s.	d.
Ewes and Wethers	0	10½	to	0	11½
Teggs	1	1½		1	2
Down Hogs	0	11½		1	0½
Wethers	0	10		0	10½

LIVERPOOL, Sept. 25.

Scotch.—We have again to report a fair demand for aid Highland Wool at our quotations. The stocks are kept low, as a good portion of our late imports have been on account of manufacturers in the interior, to whom it has been forwarded direct. White Highland continues scarce, and much enquired for. In crossed there is a good enquiry, for the best descriptions only. Our stock of good Cheviots is very light, consequently there is little doing, as it is generally held at high limits on account of the growers.

	s.	d.		s.	d.
Laid Highland Wool, per 24 lbs.	8	6	to	9	0
White do. do.	13	0		14	0
Laid Crossed do. unwashed	9	6		10	6
Do. washed do.	10	0		12	0
Do. Cheviot unwashed do.	9	9		12	0
Do. washed	14	6		18	0
Cheviot white, washed	22	6		24	0

FOREIGN.

CITY, Sept. 25.—The business doing in Wools is still to a very fair extent, and at steady prices.

In the agricultural reports from South Australia, the lambing season is stated to have proved very successful, and generally the fleeces showed an improvement.

Accounts of August 28th from Smyrna, mention that nearly all the Wools to be had there had been purchased by American houses. A French house had bought about 200 quintals, at 193 for second qualities.

Advices from Breslau of the 7th instant, state that after the unfavourable result of the Berlin market, there was not much business done in Wool during the whole of July, but that afterwards business increased. The greatest demands had been for Silesian lambs' Wool, which was at 6 to 8 dollars advance, owing to the satisfactory advices from England, and from the Pesth Fair. There were 15,000 cwt. at the Breslau market, 1200 cwt. of which were Silesian, and the rest Polish good to fine and mid. The prices asked were reasonable.

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

Bone-dust, 21s. 6d. per qr. of 8 bushels
Half-inch ditto, 21s. per qr. do.
Rape-dust, 7*l.* 0s. per ton.
Rags, 4*l.* to 4*l.* 10s. per ton.
Graves, 5*l.* to 5*l.* 10s. per ton.
Gypsum, 38s. per ton.
Salt, 2*l.* 5s. dirty, 2*l.* 15s. clean, per ton.
Lance's Carbon, 12s. 0d. per qr.
,, Humus, 14s. 0d. ,,
Soap ashes, 10s. per ton.
Artificial Manure, 12s. per qr.
Poittevin's Patent Disinfected Manure, 13s. 6d. per qr.
Nitrate of Soda, 22s. 6d. to 24s. 0d. per cwt.
Nitrate of Potash or Saltpetre, 26s. 6d. to 27s. 0d. per cwt.
Willey Dust, 4*l.* 4s. per ton.
The Urate of the London Manure Company, 5*l.* 5s. per ton.
Alexander's Chie-fou, or Chinese Manure, 21s. per cwt.

PRICES OF SHARES.

No. of Shares.	IRON RAILWAYS.	Price per Share.	Div. per Share per Ann.
6,228	Birmingham & Derby Junc. 100l sh	—la 0l	
6,228	Ditto ⅓ shares ...... 25l sh 20l pd	0la0l	
9,500	Ditto and Gloucester .... 100l sh	56la8l	
9,500	Ditto Quarter Shares...... 5l pd	2la½l	5l per ct
15,000	Bristol and Exeter..100l sh 60l pd	26la8l	
9,300	Ditto and Gloucés.. 50l sh 5l pd		
7,500	Cheltenham & Great West. Union 100l sh 62½l pd	16½l a17l	
3,000	Clarence (Durham)........100l sh	—l a0l	
64,000	Eastern Counties ....25l sh 23l pd	7½l a8l	
64,000	Ditto Debentures..8l 6s 8d..6l pd	7¼la¾l	5l per ct
18,000	Edinburgh & Glasgow 50l sh 40l pd	—la0l	
10,918	Grand Junction ....100l sh	200a0l	13lper ct
10,918	Ditto Half Shares..........50l sh	99l a100l	13lper ct
10,918	Ditto Quarter Shares 25l sh 2½l pd	27l a ½l	1l
10,000	Great N. of England 100l sh 90l pd	—la0l	5l per ct
25,000	Great Western .... 100l sh 65l pd	76la7l	3l per ct
25,000	Ditto Half Shares..........50l sh	54l a0l	3l per ct
37,500	Ditto Fifths..........20l sh 4l pd	7⅛l a⅜l	3l per ct
8,000	Hull and Selby............ 50l sh	0la0l	
36,000	London and Brighton ......50l sh	44⅜l a⅝l	
33,000	London & Croydon..Av. 15l 15s 9d	13la ½l	
20,000	London and Greenwich ....20l sh	7la8l	7s per sh
9,000	Ditto New .... 16l sh	17la18l	1l per sh
80,000l.	Ditto Debentures (various amounts)		
	Ditto Scrip .. .. 6½l each 5l pd	5¾la6l	
24,000	London & Blackwall ...... 25l sh	10la0l	
1,500	Leicester and Swannington..50l sh	55l	2½l
2,100	Leeds and Selby.......... 100l sh		4l per sh
5,100	Liverpool and Manchester..100l sh	195l	9½lper ct
11,475	Ditto Quarter Shares .... 25l sh	47l	9½lper ct
7,968	Ditto Half Shares .... 50l sh	93l a0l	9½lper ct
36,000	London & S. Western, late London and Southampton Av. 38l 17s 9d	50la1l	3l per sh
3,600	Ditto New Shares ....50l sh 25l pd	26l a0l	7s 6d
6,000	Do. Portsmouth Branch 50lsh 45lpd	46la0l	5l per ct
25,000	London & Birmingh. 100l sh 90l pd	153la5l	8½lper ct
25,000	Ditto Quarter Shares 25l sh 5l pd	21la2l	8½lper ct
31,250	Ditto .... 32l sh	52la 0l	8½lper ct
25,000	Ditto New.......... 32l sh 2l pd	22la3l	
13,000	Manchester & Leeds 100l sh 70l pd	—la0l	
13,000	Ditto Half Shares .. 50l sh 30l pd	24la5	
30,000	Manchester & Birming. 70l sh 40l pd	21la2l	
10,000	Midland Counties .... 100l sh	75la6l	5l per ct
10,000	Ditto......¼-Shares of 25l 15l pd	19l a0l	
15,000	North Midland .... 100l sh	65l a6l	4l per ct
15,000	Ditto Half Shares ....40l sh	32la0l	4 per ct
22,500	Ditto ⅓ shares of 32l 6s 8d..10l pd	9½la10l	
10,250	Northern & Eastern 50l sh 35l pd		
3,762	Severn and Wye.. Average 27l sh	45l	2l12s psh
1,000	Stockton and Darlington..Average 106l 13s 4d	255l	14lper sh
28,000	S. Eastern and Dover 50l sh 38l pd	15l a16l	
6,000	York & North Midland 50lsh	73la5l	9l per ct
6,706	Ditto Half Shares.... 25lsh 15l pd	25la6l	9l per ct
	JOINT STOCK BANKS.		
15,000	Australasia Bank (Chartered) 40l sh	54l	8l per ct
7,500	Ditto New Shares... 40l sh 10l pd	14½l a0l	
10,000	Bank of Ceylon (Chart.) 25l sh 15l pd		
20,000	Bank of B. N. America (Chart.) 50l sh 40l pd	34la5l	6l per ct
20,000	Colonial Bank (Chart.) 100l sh 25l pd	28½l a9½l	8l per ct
2000	Com. Bk. of London 1000l sh 200l pd	180l	
4,000	Ionian State (Chart.) 25l sh 20l pd	16la0l	
30,000	London and Westminster Bank 100l sh 20l pd	22la½l	6l per ct
10,000	New Shares ....100 sh. 15l pd	—l a0l	
60,000	London Joint Stock Bank 50l sh 10l pd	12l a½l	5l per ct
12,432	Do New, issued at 1l pm 50l sh 10l pd		
20,000	National Bank of Ireland..50l sh 17½l pd	16l a0l	6l per ct
10,000	Do. Provincial Bank of England 100l sh 35l pd	33¼la¾l	6l per ct
7,739	Do. New 20l sh issued at 2l 10s pm 10l pd	9½la10l	6l per ct
20,000	Provincial Bank of Ireland 100l sh 25l pd	40la0l	8l per ct
4,000	Ditto New............10l sh	15l a16l	8l per ct
20,000	Union Bank of Australia..25l sh	30l a½l	50s pr sh
12,000	Ditto New 25l sh 15l pd	19la½l	
6,000	Union Bk. of London 50l sh 10l pd	9½l a0l	5l per ct
50,000	West of England and South Wales District Bank ..20l sh 12½l pd		6l per ct

Shares.	CANALS.	Price.	Dividend
1,766¼	Ashton and Oldham Av. 97l 18s sh	109½l	7l
1,482	Ashby-de-la Zouch Average 113l sh	72la0l	4l
720	Barnsley..................160l sh	290l	14l
1,260	Basingstoke ....100l sh	5l	
1,005	Brecknock & Abergavenny 150l sh	91l a92l	6l
8,800	Birmingham 1-16th sh. 8l 15s ..	196l a8l	10l
4,000	Birm. & Liverpool Junction 100l sh	21l a3l	
100,000l	Do. do. Debentures (var. amounts)		
600	Bridgewater and Taunton..100l sh	60l	3l
159,631l	15s 0d Calder and Hebble..100l sh	365l	18l
500	Coventry .... 100l sh	307la0l	32l
20,000	Danube and Mayne..41l 13s 4d sh	29l	4l per ct.
2,060¾	Dudley ....100l sh	92la0l	5l
3,575¾	Ellesmere and Chester Av. 133l sh	80la0l	4l
1,297	Forth and Clyde ..Av. 400l 16s sh		30l
11,600	Grand Junction ....100l sh	0l a0l	7l
2,849½	Grand Union .... 100l sh	26la7l	1¾l
1,500	Grand Surrey.... .... 100l sh	15l	
120,000l	Ditto Debentures .... 100l sh	67l	4l per ct
3,096	Grand Western ....100l sh	10l	
600	Glamorgansh. Av. cost 172l 13s 4d	210l	13l12s 8d
5,000	Gloucester and Berkley .. 100l sh	13la0l	
6,239	Huddersfield .. Aver. 57l 6s 6d sh	27l a0	2l
25,328	Kennet & Avon Av. 39l 18s 10d sh	22½la0l	1l 10s
11,699½	Lancaster....Average 47l 6s 8d sh	27½la0l	1l 10s
2,879¾	Leeds and Liverpool......100l sh	750l	30l
18¾	Ditto (New)...............80l sh		16l
540	Leicester.................140l sh	155l	12½l
1,897	Leicester & Northamp. Av. 83l 10s	73la0l	5l
70	Loughborough....Av. 142l 17s sh	1570l	180l
3,000	Macclesfield..............100l sh	0l	2l
2,409	Monmouthshire ....100l sh	200l	10l
711	Montgomery (East. Branch) 100l sh	100l	5l
500	Mersey and Irwell...............	545l	25l
247	Neath....................100l sh	365l	20l
521	Oakham..Average cost about 130l	73la5l	5l
1,786	Oxford....................100l sh	590la0l	30l
2,400	Peak Forest Average about 78l sh	73l	5l
2,520	Portsmouth and Arundel .. 50l sh		
2,000	Ditto New ....25l sh		
21,418	Regent's (or London) Average 33l 17s 2d sh	8¾l	5s 6d
5,669	Rochdale..........Average 85l sh	87l	6l
500	Shropshire ....100l sh	138l	8l
800	Somerset Coal ....150l sh	120l	12l
3,600	Ditto Lock Fund......12l 10s sh	11¼l	6l per ct
700	Stafford and Worcester....140l sh	620l	36l
500	Shrewsbury ....125l sh	280l	16l
300	Stourbridge ....145l sh	396l	20l
3,647	Stratford-on-Avon Av. 79l 9s 8d sh	32la0l	2l
200	Stroudwater..............150l sh	500l	28½l
533	Swansea ....100l sh	230l a2l	15l
1,300	Thames and Severn, black 100l sh	36l	2l
1,150	Ditto ditto red..100l sh	40l	2l
2,600	Trent and Mersey......¼ sh 50l	0l	32l 10s
8,149	Thames and Medway, Average 19l 5s 8d sh	2l	
3,200	Ulster..............50l sh pd		
1000sh 1000 ½	Warwick and Birmingham 100l sh	235l a40l	14½l
980	Warwick and Napton.... 100l sh	130l a5l	12l
6,000	Worcester and Birmingham, Av. 78l 8s sh..	54l a5l	4l
5,000	Wilts and Berks, Av. 67l 10s 8d sh	29l a0l	1l 16s
905	Wey and Arun..........110l sh	22½l	1l
	MISCELLANEOUS.		
10,000	Anti Dry Rot Company .. 18½l sh	0la0l	5s per sh
10,000	Assam Tea Company 50l sh 12½l pd		
1,080	Auction Mart .... 50l sh	20l	20s pr sh
10,000	Australian (Agricultural) 100l sh 28l 2s pd	38l a9l	35s pr sh
10,000	Canada Company (Chartered) 100l sh 32½l pd	27la0l	6l per ct
5,000	Droitwich Patent Salt .... 25l sh	16la0l	20s
2,700	Equitable Reversionary Interest Society 100l sh 60l pd		4l per ct
20,000	General Steam Navigation Company 15l sh 14l pd	25¼l a¾l	1l8s pr sh
1,800	Ditto Cemetery (Chartered) 25l sh		6l per ct
1,800	Ditto New (Chartered) 25l sh		6l per ct
2,100	Hungerford Market ...... 100l pd	32l	30s pr sh
24,800	Ditto Debentures (var. amounts)..		5l per ct
5,000	London Cemetery (Chartered)		

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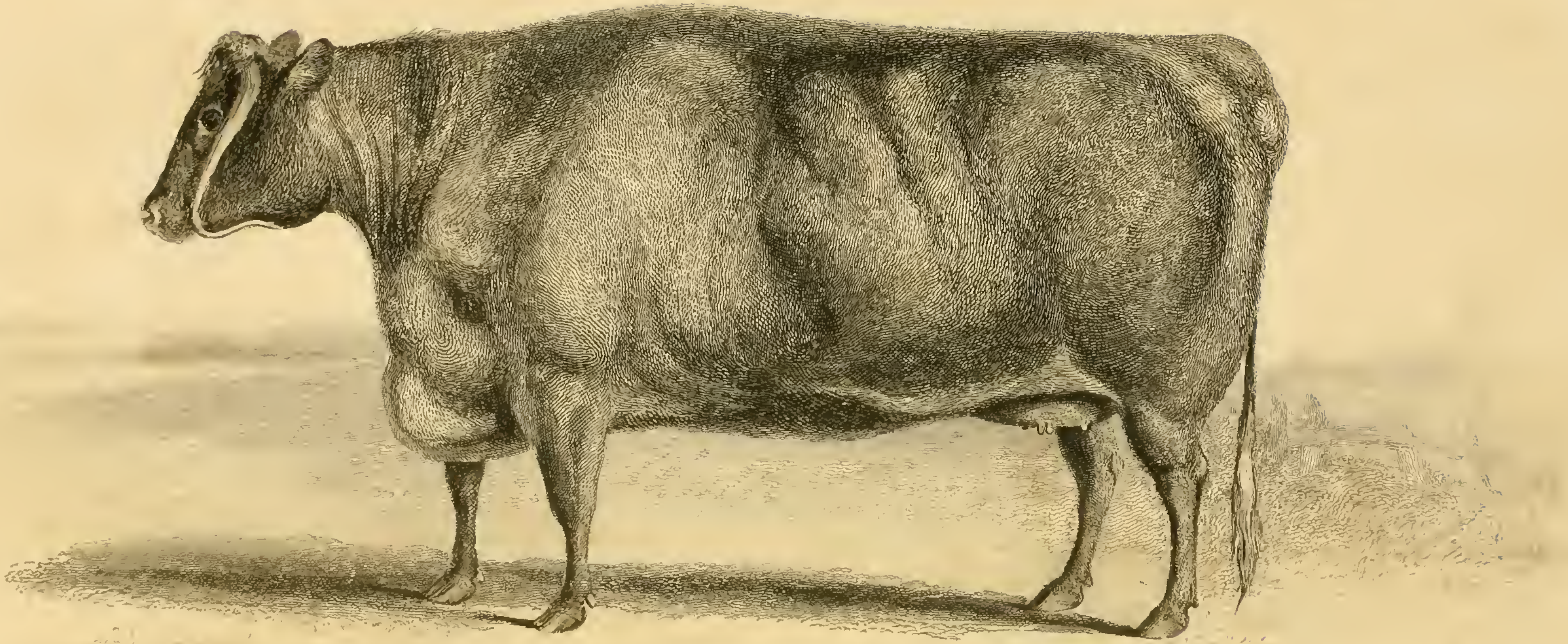
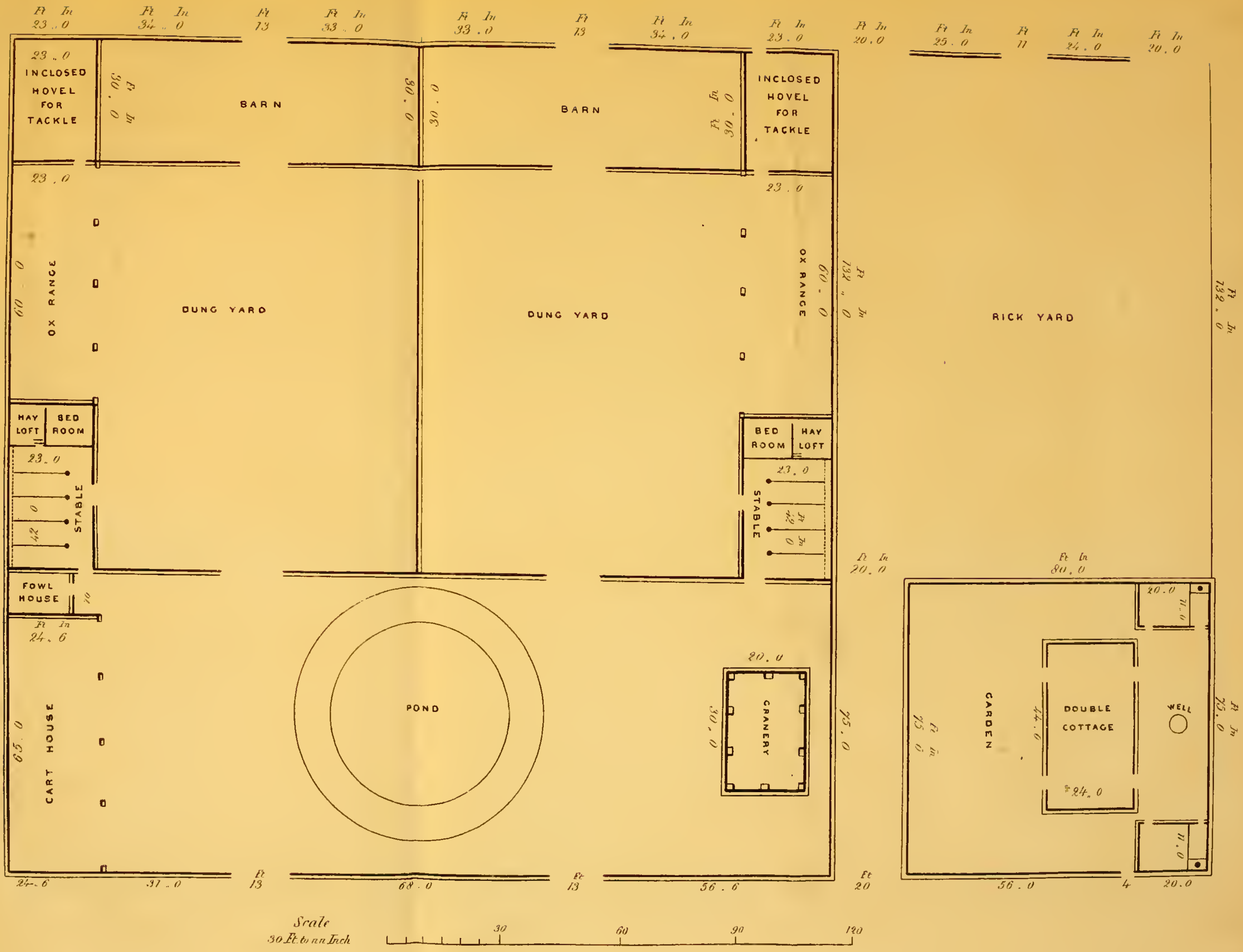


A Short Horned Cow.

[illegible] Esq.r of Charlton House, supposed [illegible] Smithfield Show [illegible]

Published by Joseph Rogerson [illegible] Street [illegible] 1811



PLAN OF A FARM-YARD, AT GOODWOOD, SUSSEX,

THE SEAT OF HIS GRACE THE DUKE OF RICHMOND.

THE FARMER'S MAGAZINE.

NOVEMBER, 1841.

No. 5.—Vol. IV.] [Second Series.

PLATE I.

The subject of our first Plate is a long-horned Cow, twelve years old, fed by Whitmore Jones, Esq., of Chastleton House, Chipping Norton, exhibited by him at the Cattle Show of the Smithfield Club, in December, 1840, and to which a prize of five sovereigns was awarded, as being "the second best fat cow of five years old and upwards." This animal was bred by Mr. Wakeman, of Beckford, Gloucestershire.

It has been much disputed whether Ireland or England originally possessed the long-horned breed of cattle, but the more general opinion points out the district of Craven, in the West Riding of Yorkshire, and bordering on Lancashire, as being the seat of the most valuable of that kind of cattle. Many counties in England possessed long-horned varieties, which seem to be all assignable to one indiginous stock.

Mr. Webster, of Canley, near Coventry, was the first scientific breeder of the long-horns, and he founded his stock on some good cows which he bought of Sir R. Gresley, of Drakelow, near Burton-on-Trent, a gentleman who took much delight in keeping a dairy of cows of similar colour and shape, and in importing bulls from Lancashire and Westmoreland. Next followed the celebrated Mr. Bakewell, of Dishley, who raised the long-horns to the greatest celebrity they ever attained. Several individuals in the midland counties were distinguished as breeders of long-horns, which were carried to Ireland to improve the original race. About the year 1790 very high prices, nearly £300 a-head for the best bulls and cows, were obtained by Messrs. Fowler and Princeps, two noted breeders of long-horns, and sixty and eighty guineas a season were paid for bulls, limited in use. It has been remarked that no breed rose more quickly, or has sunk more rapidly, than the long-horns; for, with the disappearance of Mr. Bakewell and his cotemporaries, and their immediate successors, the breed gradually declined. A deterioration had taken place in refined breeding, from want of the interposition of remote affinities, a point not then understood, and but imperfectly even at this day. A powerful competitor appeared in the improved short-horn, which yielded more bulk, earlier maturity, and an equal aptitude to fatten. A cross between the two breeds has been found preferable to the original long-horn, and a dairy of the pure breed is now rarely to be found. But they possess many valuable qualities both for the butcher and grazier—the fine tapering shoulder covered with flesh, is scarcely to be found in any other animal, and the great length of back affords more valuable cuts than in other breeds, while the entire carcase possesses much symmetry and fulness of form. For the pail, or suckling, they are by some thought celebrated—an unfavourable lightness of form attends the inspection, the eye is dull, and they never attain in the hide that silkiness of skin and mellow touch which is now so much prized in the improved breed. The horns are also unsightly and inconvenient: but though they possess fully as many good qualities as bad ones, they continue to give way to the short-horns, even in the native districts. The climate and soil that suits the one will keep the other, or the crosses—the higher latitudes neither; and experience has shown a greater combination of qualities in the latter than in the former. The breed and its varieties still occupy a large space, and by judicious crossing may impart some valuable properties to their descendants.

PLATE II.

In the Second Plate we give an Engraving of a Farm Yard upon a small scale, belonging to his Grace the Duke of Richmond, and situate in the Park at Goodwood, Sussex. It is not calculated for business upon an extensive scale, but taken as a whole is one of the best, if not the best and most convenient which we have seen.

A DAY AT RIDGEMONT.

BY MATTHEW MARMADUKE MILBURN, ASSISTANT SECRETARY TO THE YORKSHIRE AGRICULTURAL SOCIETY.

Few things, perhaps, afford better opportunities for the agriculturist to improve his knowledge of the practice of his employment, than visiting and inspecting the systems of cultivation, improvements, and practices of other farmers, in different districts of the country. And I know of no recreation which so relieves the application required in the close supervision of the cultivation of a farm, as a visit to a scientifically managed estate, whether we agree with, or dissent from, the plans of the cultivator. It was with uncommon pleasure that I had an opportunity, recently, of riding over that model of careful and excellent cultivation—the farm of William Stickney, Esq., of Ridgemont, in Holderness. To a light land farmer many things were necessarily new; and had I gone over a farm having in general, with a few exceptions, abundant crops, stock of good quality, and well ordered fences, doubtless the reflections would have been delightful; but it was not the abundant crops of waving corn—not too heavy to lodge, and still not anything wanting—that I found to admire, but it was the manifest spirit of improvement in the direction of the whole—the perfect system, order, and uniformity which prevailed, and which reminded me, not of improvements rapidly, and extensively, and fitfully commenced—not of rash experiments made without judgment, which clearly must fail—not of absurd theoretical views attempted to be forced into practice—but an extensive view of what is excellent in cultivation, carefully adopted, and carried out in its details with all the regularity and care of well ordered machinery.

It is not my intention to give a report of Mr. Stickney's general mode of culture, which would be quite out of place, after the lucid and interesting report of the cultivation of this farm, published by Charles Howard, Esq., but simply to commit to paper, for the benefit of your agricultural readers, what I saw going on in June last, the period of my visit. The road to Ridgemont is somewhat winding, and passes through a considerable portion of the farm: the sides of the carriage road, carefully mown, clearly indicated that while nothing was wasted that could supply food to the animals, it was carefully conveyed away for the purpose of soiling, that the manure made from it might be collected and usefully applied, instead of evaporating and wasting so unsightly by the sides of the road. To the left were some large fields of oats, late indeed, but beautifully drilled, and having the most luxuriant and thriving appearance, (and every farmer knows that very late sown oats cannot look too luxuriant.) Two men were employed in pushing a hoe before them between the drills, to destroy every weed, and open a new surface of soil to the atmospheric influence, to imbibe oxygen and carbon from the air. I have long been of opinion that the great frequency of fallows on strong land generally adopted, was not altogether necessary; and the practice at Ridgemont most triumphantly proves it, for four, five, and six years intervene in the rotations between the fallows. But soon a fallow field I did see, and in such condition. Advantage had evidenlty been taken of the preceding fine season, for its working was, so far as root weeds were concerned, completed; and I urged that it was fit to sow with rape, and thus get a green crop in the fallow year of the rotation.

The next object was a field of beans in flower, not indeed very tall and growing, but beautifully clean and beautifully *level*—the best criterion I know of, of a useful crop and *good* management: to this, however, there was one exception. Mr. Stickney pointed to one round portion of the field, perhaps sixty yards in diameter, where the beans were several inches taller than any other part of the field. Of this I should have been disposed to take but little notice under ordinary circumstances, imagining that it had been the site of an ash heap or mixen in some previous year; but I was astonished when I was informed that it manifested this superiority every year, and had done so for centuries, or at least so long as any memory or legend could go. It is invariably managed like the rest of the field, and no matter what crop is grown, whether wheat, beans, oats, or rape, it always exhibits the same superiority, and for the same circumference; and it did the same when it was in grass, in the time of the present occupier's ancestors, whether mown or depastured. The soil and subsoil, to a considerable depth, has been examined with some care—rather superficially I apprehend—and no perceptible difference exists from the remainder of the field. The idea suggested itself to me, that possibly it might be the site of a Roman encampment, and that, at a considerable depth, a large quantity of bones might be interred, which, by giving off ammonia in the process of their decomposition, gave this decided superiority to the crops growing in the place. This is, however, quite unsupported by any evidence, and is perfectly gratuitous on my part.

The fences at Ridgemont are a perfect model; all beautifully luxuriant, completely filled with thriving quicksets, and kept in the most beautiful order. Mr. Stickney commenced quick-wood planting in the ordinary way of three inches apart: he observed, however, that those planted the thinnest were the most luxuriant, and he planted them six inches wide. Finding this answer his expectations, he ultimately planted them nine inches apart, with decided success; so much so, indeed, that the great part of the beautiful thick fences I saw, were the result of this system. It ought to be known, however, that the quicksets were not thrust in, and no more attended to; but planted with the soil in good order, and cleaned and *cultivated* with as much attention as is manifested in the rest of the crops.

The great quantity of straw grown by this excellent cultivation has to be converted into manure; and no more turnips are grown on the farm than serve the ewes in the spring. This evil is met by growing a considerable quantity of green crops in summer, especially tares, and soiling; by this means a very large quantity of excellent manure is made, and summer-made manure is worth nearly double that made in winter, if there is an equal quantity of green food consumed in both cases. The drainage of the yard is conveyed into a tank or reservoir; and as Mr. Stickney has not found such beneficial results from the application of the liquid to the soil in his farm as to induce him to cart it away,* he conveys it to the dryest part of the straw and dung in the fold-yard. The liquid being thus constantly returned, excites fermentation in summer, but in a wet season must be superfluous, and much of the benefits of it are lost by evaporation. I differ too, most entirely—and it is only fair to name it, for it is the only "eye-sore" on the farm that I witnessed—and that was the manure was carted to the road-side instead of being conveyed into the field at once. It requires a good reason to excuse this under any circumstances; for how carefully soever it is shovelled up, there is always much wasted which ought to be applied to the field and for the crop, for which it was intended.

The stack-yard, while it exhibits evident care of the grain, and an excellent contrivance, simple yet efficient, for admitting the air to the stacks by placing them upon raised clay platforms, bisected in the middle in connexion with an air flue in the stack; yet there is nothing of that foolish, fantastical dressing of the stacks, more as if they were intended for permanent pyramids than preserves of grain from wet for a few months.

The agricultural implements are of the useful cast—nothing whimsical, nothing ridiculous—but such as the evident wants of the district require. I saw, too, a Russian plough and harrow, certainly the rudest and worst constructed nonentities I ever saw, only fit companions to the Russian loaf they were exhibiting during the elections. I advised him to exhibit them at our exhibition at Hull, which he did, to the no small wonder of the persons who noticed them.

From the appearance of the grass land, it is evident that no pains have been spared in laying it down to permanent pasture. His own introduced rye-grass forms a considerable part of the best grass fields, and sustains the character, both there and elsewhere, which it had in 1817, and which obtained for its introducer the medal of the Society of Arts. There was, too, in one of the most beautifully cultivated gardens I ever saw, a specimen of his giant clover, (*Meliota Maxima.*) At the time I saw it, it was at least six and a half feet high, and a stem of it which remained of the previous year's growth, was more than double that height; of course it would not be allowed to grow so high in ordinary cultivation, but its rapid growth (several inches in twenty-four hours) renders it very valuable if it succeeds in our climate, of which, from the specimen I saw, I have no doubt whatever.

It is time my lengthy paper came to a close. If any one were to ask me where he could see excellent practical, strong land farming, I would say—Go to Ridgemont.

Thornfield, Thirsk.

MODE OF SOWING AND TREATING TURNIP CROPS,

ON SIR FRANCIS MACKENZIE'S FARM OF CONAN, ROSSHIRE.

This farm from drilling, hoeing, and green crops, is of course supposed to be as free from weeds as well-favoured lands generally are; after ploughing, an excellent light, but sufficiently powerful, grubber raises all ground weeds to the surface, and after using it, and also after every harrowing, the land gets thoroughly cleaned by hand weeding, thus rendering any land, however dirty, perfectly clean in the course of two seasons; all weeds, nettles, thistles, docks, along sides of roads, walls, hedges, and plantations, are as carefully extirpated as in the fields, for being in the vicinity of a weed nursery is always dangerous. So soon as harvest is over, about half the usual quantity of well-rotted, but not fermented, farm-yard dung is carted on the stubbles intended for turnips the following year, and if the weather admits, laid in drills, as if preparing for sowing, at 26 inches apart. Should the weather be too wet, the dung can be spread and ploughed in.

In this state the land lies all winter; early in May it is gone over with the hoe and hand weeding till all weeds appearing are destroyed. Not later than 15th May, and better if end of April, judging from Mr. Skirving of Liverpool's immense crops, the ridges are dibbled with a light two-wheeled machine, having knobs shod with iron, fastened on the rim of the wheels at the proper distance for turnips to be apart. This simple dibble, invented by Sir F 's factor, Mr. P. Macewan, will, with a quick stepping horse changed for another at mid-day, dibble a field of 16 acres in the day. A group of girls then follow the dibbler, three to each ridge; the first carrying whatever artificial manure may best suit the soil, in a basket or coarse apron, and dropping with her hand the necessary quantity into each dibble hole; the second girl follows close with the seed, and drops it at the rate of 4lbs. to the acre, which ensures a better plant than a less quantity; the third girl comes last, and with a flat piece of wood or her hand covers the seed with about one inch of the soil, sometimes less.

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* I have found the most beneficial effects from its application to light soils.

If the weather be favourable, the green leaves appear in two days, forced by the closeness to the artificial manure and its heat; at the proper time (not too soon) they are properly thinned, and of course at all times kept free from weeds.

When tolerably well grown, the double mould plough is used, and does much good in softening and crumbling the soil, so as the more readily to receive all moisture; an instrument also is used peculiar to the country, which eradicates annual weeds and stirs the soil well: they are always hand hoed twice at least in addition; once when thinning, and once or even twice afterwards, if from the appearance of the turnip leaf it seems necessary.

One half the dung if given early in winter and ploughed in, will be found equal to double that quantity laid on in spring before sowing time. A truth which Sir F. first learned from a statement by Sir J. Suttie, of East Lothian, where his turnip crops are always first rate, the soil being almost inconceivably good; such is by no means the case on Conan farm, the greater part having not many years ago been reclaimed by deep spade trenching, draining, and stone blasting, from a perfect valueless waste.

Sir F. only sows Skirving's Swede, which has proved itself always superior to any of the many other varieties. Mr. Matson, of Kent, this season sent him some of his seed, which was sown in the same field and in the same manner as Skirving's, but the report from Sir F.'s manager, he not having seen them himself, is by no means favourable. The greater part of Conan farm being a light gravelly soil, not yet warmed sufficiently by repeated manuring since reclaimed from waste, Hybrids are grown on the greater extent, instead of Swedes, which prefer a strong rich black clay loam; and the best kinds are Scot's purple-topped Hybrid, and Gordon's yellow, both of excellent quality and great size, the seeds of which can be obtained from Mr. Lawson, of Edinburgh, in the greatest purity. These Hybrids are not sown till about 8th June, though a few acres of white globe are sown same time as Swedes, and grow to an extraordinary size, used for early house feeding, and if left growing beyond October, would become spongy and worthless.

Late in October, Sir F. takes up all his Swedes, and all his other turnips so soon as wheat sowing on the Swede ground is finished, and the weather permits. With a slightly curved knife, about 8 in. long, fastened to the end of a 2½ ft. long stick as handle, and having a piece of soft thick coarse woollen cloth fastened round the upper part to keep the girl's hands warm, and held in her right hand, and a small forked stick being in the left, she pushes the leaves a little aside, and with the knife cuts them away at about 1 or 1½ in. from the bulb. Another girl follows with an iron two-pronged fork-like instrument, which is so formed as to clasp tight all sizes of turnips, and easily pulls it out of the ground; the roots of two ridges are left in one hollow between two ridges, and the leaves in the other to facilitate gathering.

The leaves are carted away, and before they shrivel much, laid on stubbles intended for potatoes or tares the following year, and as soon as possible ploughed in, where, if applied with tolerable thickness, they prove a first rate manure, whilst Sir F. has frequently found them injurious to both cattle and sheep if eaten in large quantities.

Swedes are all eaten at home in cow-houses, sheds, and courts, by cattle and sheep, and keep well till June. The Hybrids when taken up as described of Swedes (as they have yet no farm-yard manure) are partly left and stored on the field where grown, and not above one-third or one-half removed, according to the rich or poor state the land may be in.

Those taken away are consumed *by sheep, like those left* on any fields requiring aid, and some are carted home, as may be most convenient; all, whether Swedes or Hybrids, at home or fed off on the fields, are stored in the same manner, thus:—

None of the roots, however long, are cut away, and they are placed singly side by side, touching each other, but not one above another, in squares, or any other shape better liked, at the places, or as near as possible to the parts, requiring most manure by sheep feeding; such squares being distributed all over the fields as wanted, and cut by a turnip slicer for use. A covering of straw is then thrown over them 2 or 3 inches thick, fastened down with straw ropes, and protected still more by dead branches of trees, if to be had, laid over the straw. This mode of storing is preferable to any other; rotten bulbs seldom or ever occur if they are carefully handled, and not cut or bruised. Sir F. once sowed the common green-topped white globe on one of his fields, one half of which were taken up in November, and stored as now described, whilst the other half was left rooted and eaten off by sheep; and those stored were as fresh and juicy in April as when first taken up, whilst those left were spongy, open-hearted, and nearly useless.

The great merits of Sir F.'s mode of treating turnips is,—

1st.—The almost certainty of the crop not being injured by fly or other insects.

2nd.—Their preservation completely from damage by frosts, hares, rabbits, rooks, wild pigeons, or any thing else.

3rd.—The land is not nearly so much exhausted by a turnip crop when taken up early in winter, as when in the ordinary fashion they are left in the soil till wanted for use. When Sir F. mentioned to Mr. Skirving, of Liverpool, a most intelligent agriculturist, as well as distinguished seedsman and nursery gardener, his mode of managing his turnips, and the heavy crops of wheat which his land gave after Swedes, he exclaimed, that now for the first time he had discovered why a neighbouring farmer who took up one half of his turnips early in November, and was prevented by bad weather from taking up the rest, had an excellent crop where they were taken up, and a poor one where the turnips were left all winter, though the whole field had received the same treatment. Turnips eat away the greater part of the manure during winter, after all increase of size is at an end; thus resembling the glutton, who destroys a vast quantity of food, and yet has his health and strength always deteriorating.

4th.—The dung gained by ploughing in the leaves, is of considerable value, whilst, as already stated, if used by cattle or sheep might be unwholesome.

5th.—Those turnips thus stored are, after 1st January, worth three times the value of any left rooted in the fields.

6th.—By allowing the roots to remain some days on the fields where grown, deprived of their leaves, they are well washed from all earth by the heavy rains common at that season of the year, and thus the expence of washing, no trifle on large farms, and necessary if cattle or sheep are wished to thrive superiorly, is *wholly saved.*

Thus there are six strong reasons in favour of Sir F.'s mode of turnip management, whilst he cannot find one good reason against it. The expence of pulling and carting is, in whatever mode managed, the same; and so far from advantage gained by leaving turnips in the ground, the teeth of young sheep are destroyed—frost often for days prevents their feeding at all, and great part of the under part of the turnip is uneatable, and lost, from its dirty state, always in wet weather.

Sir F. has much pleasure in making, at the request of several friends, his improved mode of turnip management known to the public and his brethren farmers, in whose welfare he ever feels an affectionate interest; and if any one, exactly and carefully following the above instructions, finds himself disappointed in the results, Sir F. will gladly listen to his complaints, and endeavour to find out and remedy the causes of his failure.

ON LAND-DRAINAGE, SUBSOIL PLOUGHING, AND IRRIGATION.

BY THE AUTHOR OF "BRITISH HUSBANDRY."

This pamphlet, which we purpose to give entire, part in this number and the residue in our next, contains, in a cheap and convenient form, the most recent and approved opinions on the above-mentioned important subjects, with the author's judicious and experienced remarks. Decisive proofs are carefully collected to show the great advantages of complete draining, while any failures are justly traced to imperfect execution. On all subsoils that are in any way retentive of water, draining is allowed to be necessary in order to derive the benefit of subsoil or trench-ploughing. The superiority of tiles over stones or any other articles for the purposes of draining is allowed, except in some particularly favourable situations for the access of stones; the lightness of carriage and the readiness of application must give most decided advantages.

Few farmers purchase or read every book or periodical that contains most valuable statements and opinions on the different branches of agriculture; and consequently such publications as the present become highly useful in presenting to view, by a very short examination, the most recent and approved modes of practice, which might otherwise have remained long unknown. We have much pleasure in giving it an unqualified recommendation to our agricultural readers.

"Of all those improvements which the increase of wealth and population has occasioned to the agriculture of the country, none was, until within these few years, in so backward a state as that of drainage. Notwithstanding the improved fertility of those soils on which, in some few instances, it had been carefully tried, the owners and occupiers of the land seemed generally insensible to its value; and there was among them an unaccountable degree of apathy to its adoption, caused probably both by want of due information regarding the best modes of carrying it into effect, as well as by disinclination to incur the expense.

Our farming ancestors, although constituting an estimable race of sturdy yeomanry, were indeed mostly ignorant men, working upon small holdings, and with such slender capital as seldom to inspire any thought of obtaining from them more than a decent subsistence. Rents were paid chiefly in kind from the produce of the ground and personal service; the population was scanty: the product of the soil comparatively trifling; and large portions of the kingdom were either under forest, or in a state of unproductive waste. It may, therefore, be naturally supposed that little value was set upon land apparently so worthless; and it was not until long after the abolition of the feudal system, that any attention was paid to its improvement. Even then, although farmers might endeavour to carry off the waste water from the surface of their land, by cutting a few furrows across a field to communicate with the ditch by which it was bounded, yet such an operation as that of the present manner of under-drainage for the purpose of laying the land permanently dry, was hardly known to them; for although remains have been found of some very ancient land-drains, they were only made either on the demesne of some wealthy baron, or, not improbably, on estates belonging to the monks, who were then the only enlightened husbandmen in the kingdom. The drainage of the fens in Lincolnshire and Cambridge, although a public measure of national importance proposed in the reign of James I., was not actually commenced until the time of the Protectorate, when it was undertaken by foreigners; and the present state of the Bedford Level is mainly due to the exertions of Colonel Vermuyden, a Dutchman in the service of Oliver Cromwell, who was a himself a farmer, and a warm friend to agriculture.* His countenance, added to the political circumstances of the times, then induced many persons of means and education, who had been engaged in the civil war, to turn their attention to farming, on the cessation of hostilities; and a still further impulse was added to it by the subsequent introduction of the turnip husbandry, which, in a great degree, altered the previous system of culture, by the progressive advancement of alternate corn and green crops, to which is chiefly owing our present eminent station as agriculturists.

The turnip husbandry, however, demands a comparatively dry soil; for one of the greatest advantages attendant upon the growth of the root arises from the power of having it eaten off by sheep upon the ground, and thus effectually manuring it without expense. The propriety of adopting this practice became apparent from the evident increase which it occasioned in the crops of grain, as well as by the consequent increase of rent justly demanded by landlords for soils of a description adapted, either by nature or by art, to its operation; and this, together with the certainty that land chilled by stagnant water can never make a profitable return for the labour of tillage, induced a greater attention to drainage. Still, the difficulty at that time of conducting it scientifically, and the failure in several instances of the principles put forward on the subject by Elkington, added to the sums of money thrown away in unskilful management, caused a temporary check to its general use. Farmers, however, having learned from experience that manures, whether caustic or putrescent, do not impart their intended benefit to wet soils, while those laid upon gravels, loams, or land of a light porous nature (if not resting upon an impervious subsoil,) act to the full extent of their powers upon vegetation, are at length convinced that the only means to be relied on for the correction of this serious evil is—*to render the ground dry by drainage*.

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* There is existing, however, the record of an ineffectual attempt made by a company of Flemings so long ago as in the reign of Henry VII, referring, as it is supposed, to the same object.

It is, indeed, so essential to the due effect of all kinds of manure, that in the application of lime it is indispensably requisite not only that the ground should be in a dry condition, but also that the lime be laid on it in the driest season: bone-dust is now well known to be ineffectual on wet soils; and even stable-dung has comparatively less power on land in a humid state than on that which has been drained.*

Soils of various kinds are in many cases infested with surface springs, which may frequently be got rid of with comparative ease by *open drains*, which lay the land tolerably dry wherever there is sufficient declivity to carry off the water; although, if these be cut on pasture-land, they are subject to this objection, that, if sheep be fed upon it, they sometimes render the fat stock liable to the accident of being cast. If, however, those springs be lower down, and found at different distances in alternate strata of sand and clay, or gravel, their depth should be ascertained by boring; as the land can never be laid dry until perforated to the bed of impervious subsoil upon which those strata rest, and upon which *covered drains* must be sunk for the complete escape of the superabundant moisture. It should also be borne in mind, that, although open and covered drains may have partly similar effects, they are yet essentially different in execution, and should never be used together in the same operation; for if the surface water be allowed to get into the covered drains, the sand and earth which it will carry into their channels will be apt to choke them up.

Heavy clays also—like those, for instance, in the wealds of Kent and Sussex, or any land retentive of water, and lying upon a dead level—can never be rendered efficiently productive without the most thorough *under-ground drainage;* for, the water being upheld upon the surface during the winter, the ground must be ridged up at a great expense of toil and wages for the purpose of exposing it to the sun and air; yet still vegetation flags until an advanced period of summer sunshine evaporates the injurious humidity occasioned by the falls of snow and rain. In this state, indeed, may be found some of the richest land in the kingdom, consisting of alluvial layers of absorbent earth over a substratum of adhesive clay, with a surface of little or no declination, which, thus retaining the superfluous moisture, retards the progress of vegetation; added to which, if the land be in grass, it will be materially injured by the poaching of cattle pastured upon it in wet weather; and, if sheep be put upon it in autumn, it will go far to rot them.

Hence the plants become sickly, the harvests are generally late as well as precarious, and the crops not unfrequently deficient in both quantity and sample. Yet numerous instances might be adduced of not only such lands, but of soils of every decription, which were reduced almost to the state of worthless swamps by the retention of stagnant water, having been converted into sound turnip land, worth more than double the rent at which they were originally held: and that simply by the simultaneous operation of subsoil-ploughing and under-draining, at an expense which, in many cases, has been repaid by the increased value of a couple of crops. Indeed, it appears, by a communication recently received from Mr. Robson, the land-agent of Earl Grey, in Northumberland, that the entire charge of drainage has been covered by a single crop of Swedes; and many communications from other quarters have been made to the same effect.

Notwithstanding a manifest disinclination on the part of most farmers to afford information on the profits of drainage,* yet, in order to remove any doubt which might be entertained of the success of the operation, the following accounts, taken from a variety of cases, may not be inappropriately quoted.

One of these, lately published, contains the particulars of a purchase made by Mr. Denison, of Kilnwick Percy, of about 400 acres of rabbit-warren, of an apparently sterile sand, with a heavy ferruginous subsoil, the hills covered with heather, and the hollows a bed of marshy aquatic plants. The cultivation had been abandoned; as it was found, though pared and burnt, not to produce more than three quarters an acre of oats, and the land was let at 2s. 6d. the acre. Mr. Denison then subsoil-ploughed a portion of it, and tile-drained it with soles at every twelve yards apart, at the cost of 5*l*. 4s. 8d. the acre, exclusive of the carriage of the tiles from the manufactory. The land, being afterwards manured in the common way, has produced ten and a half quarters per acre, of Tartarian oats, which fetched 26s. per quarter; and now bears wheat and oats on a property which was previously considered useless.†

In the same publication it is also stated, that some land belonging to the Rev. Mr. Croft, of Hutton Bushel, which was not thought worth 5s. an acre, is now let at a guinea: "evidently from the effect of the drainage by the breaking up of the Moor-pan."*

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* "Although *lime* readily decomposes vegetable matter, it yet only decomposes it advantageously in dry soil, or soil rendered dry by draining, the moisture in wet land rendering it effete before it has time to act chemically on the vegetable matter in the soil. Before the application of lime in any circumstances, land should therefore be thoroughly drained."—p. 175.

"Whatever may be the chemical action of *bone-dust* on soils, we can assert with confidence that bone-dust will impart no richness to any kind of soil unless the land is either naturally dry or has been drained; and the more thoroughly it is drained, the greater effect will bone-dust have upon it as a manure."—p. 176.

"The perceptible dampness in undrained soils dissolves the soluble portion of *farm-yard manure*, which, by its gravity, descends beyond the rootlets of young plants, whilst the strawy portion remains undecomposed for a length of time, which may account for the invariable languid vegetation of plants, while young, in undrained land."—p. 173.—Quart. Journal of Agric., N. S., No. 38.

* Of this, however, there are exceptions; as, for instance, Mr. Dudgeon, a tenant on the Falkland estate in Scotland, has given a very detailed and interesting account of the drainage, which he concludes by stating "that the effect of the operation has been to convert a very considerable extent of land, a great part of which was formerly a mere swamp, into a rich and fertile soil, now producing luxuriant crops of oats, turnips, and grass." See Prize Essays of the Highland Soc., N.S., vol ii. p. 74.

† See Transactions of the Yorkshire Agric. Soc., and Journal of the Royal Eng. Agric. Soc. vol. ii. art. 2.

Sir James Graham likewise mentions his having recently let a farm at 20s. an acre, after its having been subsoil-ploughed and drained, which had been valued before the operation took place at 4s. 6d. per acre.† The cost of this improvement was 6*l.* 18s. 4d., as follows :—

	£	s.	d.
70 roods of draining, cutting, laying the tiles, and upfilling, at 4d. per rood..................	1	3	4
1500 tiles per acre, at 30s. per thousand..................	2	5	0
Carriage of do., 6s. per do.	0	9	0
Do. of turf for covering the tiles, and cutting do., 70 roods at 6d. per rood	1	15	0
Ploughing with the Deanston plough and four horses......	1	6	0

Thus yielding an annual interest of rather more than eleven per cent. on the outlay.

I have moreover the authority of the Marquess of Tweeddale for stating, that the increased product of his home farm, at Yester, in Scotland, has been nearly two-thirds on most of the crops, and in some cases much more, upon all the land which has been subsoil-ploughed and drained. One field, indeed, which his lordship declares to have formerly carried only 17 bushels of oats per acre, has given 67 bushels of barley, after having been trenched-ploughed and drained.

These improvements by means of drainage, although clearly evincing its importance, both to the landlord in the increased value of his property, and to the farmer in the production of his crops, are yet less decisive than that which I shall here briefly attempt to describe.

The extra-parochial place of Teddesley Hay, in Staffordshire, is the residence of Lord Hatherton, and contains 2586 acres. It was originally part of the forest of Cannock, and, with the exception of two anciently enclosed parks—one of them containing 589, the other 198 acres—continued unenclosed till the year 1820, when the whole became, either by allotment or purchase, the property of his lordship.

Since then Lord Hatherton has been engaged in laying out this tract and the adjoining land in a manner suitable to the neighbourhood of his residence, by making large plantations and an extensive farm ; the old park fences having been thrown down, and the whole of the lands subjected to a new arrangement.

The extent of the farm-lands is 1832 acres, comprising a range of high and dry hills to the east, adjoining Cank Chace, which hills were formerly an extensive rabbit-warren, covered with heath or fern. From the hills the lands slope gradually, with slight undulations to the west, down to the river Penk—a distance of somewhat about three miles.

Having heard this tract of land below the hills mentioned as exhibiting in a striking manner the results both of judicious draining and employment of the water so obtained, I took an opportunity of visiting the place in the latter end of May, 1841. I was conducted over it by Mr. Bright (the respected land-steward in the management of the property,) who gave me the details contained in this paper ; and on riding through the farm—which then presented an appearance of the most luxuriant vegetation—described to me the condition of the lands in 1820. The larger park, which had been long divided into fields, was ill-cultivated, and the lesser park might be fairly viewed as one bed of rushes. The circumjacent common-lands were also covered with heath or rushes, and, in the lower parts, with alder. The extent of surface which did not require draining was comparatively small ; and the whole consisted generally of a light soil, rather inclined to peat; the subsoil being chiefly a stiff clay.

While the enclosure was in progress, some very deep drains were made in the marshy lands of the larger park, which were effectually drained, and from which large volumes of water now issue. As soon as the enclosure was completed, other deep drains were made on several parts of the allotted waste, and for the most part with excellent effect.

Things were in this state when Mr. Bright became agent to Lord Hatherton, about eleven years ago. He immediately conceived the notion of putting the waste allotments, containing a surface of nearly 600 acres, through a regular course of thorough drainage, and afterwards collecting the whole of the drain water into two main channels ; with the double intention of conducting one of them through the farm-yard, for the purpose of obtaining by it a water-power for various objects connected with the estate, and then employing it, in conjunction with the other stream, in making an extensive tract of upland water-meadows.

The plan occurred to him in consequence of there being no natural stream on any part of this land. It must, however, be acknowledged to have been a bold attempt, which could only have been conceived by a comprehensive mind and a man of great practical knowledge ; but it was liberally seconded by his noble employer, and has been accomplished with admirable success ; as the following statements will sufficiently explain.

First, as to draining.

The following is a statement of the improvement by drainage, and the expenditure during the ten years preceding 1841, upon such parts of the estate as have been drained :—

Quantities.			Value of the Lands in their original state.				Amount of expenditure in under-draining.			Value of the Lands in their present state.			
			Per acre.	Annual value.						Per acre.	Annual value.		
a.	*r.*	*p.*	*s.*	£	*s.*	*d.*	£	*s.*	*d*	*s*	£	*s.*	*d.*
78	1	36	10	39	4	9	262	15	0	27	105	18	9
19	1	32	10	9	14	6	74	9	8	35	34	0	9
38	0	2	16	30	8	3	52	14	2	40	76	0	9
82	2	2	15	61	17	8	346	16	4	30	123	15	4
30	3	24	10	15	9	0	121	5	8	35	54	1	6
81	1	34	8	32	11	8	153	16	4	22	89	12	2
36	3	16	10	18	8	6	142	8	0	30	55	5	6
33	0	0	8	13	4	0	80	5	2	26	42	18	0
10	2	33			..		90	8		50	26	15	3
10	0	8			..					21	10	11	0
9	0	0	12	5	8	0	76	9	8	30	13	10	0
15	0	11	16	12	1	0	41	9	4	33	24	17	3
21	2	10	15	16	3	5	66	0	0	30	32	6	10
467	0	9	..	254	10	9	1508	17	4	..	689	13	1

The main drains have been laid about 3 feet deep, with tiles about 5 inches wide by 12 inches

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[*] Journal of the Royal English Agric. Soc., vol. ii. p. 35.

[†] Journal of the Royal English Agric. Soc. vol. i. p. 32.

long. The branch drains are about 2 feet 6 inches deep, and are laid with tiles about 4 inches wide by 12 inches long. The cost of the former was about 45s., and the latter about 35s. per thousand, when purchased at the kiln. The cost of cutting and laying the main drains was about 1s. per rood of 8 yards, and the small drains about 9d. per rood; but it should be observed that in this part of Staffordshire the labourers' wages are from 2s. to 3s. per week higher than they are in many other counties, on account of its being near the important iron and coal mines, as well as the Staffordshire potteries. In some of the valleys the substratum is of a loose mixture of sand and gravel, and in those places it was found necessary to adopt drains varying from 5 to 8 feet deep, which pour forth large bodies of water both in summer and winter.

These lands having been effectually drained, Mr. Bright's next object was to collect so much of the drain-water as the levels permitted into two main carriers, for the purpose of employing them as a power to turn a mill-wheel, and afterwards to be applied in irrigation. For the former object a small reservoir has been constructed, at a favourable level, about half a mile distant from the farm, the buildings of which are in a central situation. Here at the farm-yard a mill has been built; and it is a work which, both in its conception and execution, does infinite credit to Mr. Bright; for not only is there much merit in various contrivances by which the water is conducted to it, almost everywhere in covered drains and carriers, but it was necessary to seek a level to carry off the water at a considerable depth, by driving a head-way through a bed of hard sand-stone from a distance of about 500 yards. The stream of water was of course not sufficiently powerful to turn an under-shot wheel; and, to enable it to act with force, it was necessary to bring it out to the upper part of a wheel of thirty feet diameter. This wheel has been placed in the rock thirty-five feet deep, and the head-way has been carried from the bottom through the rock, which comes out in a valley below, at the distance, above mentioned, of 500 yards.

The mill and this channel for the water cost very little more than 1000*l.*: it works a thrashing machine; cuts hay and straw, and kibbles oats and barley for a stock consisting of about 250 horses and cattle; grinds malt; and also turns a circular saw, which does great part of the sawing for a large estate. The annual saving by this machinery has been carefully estimated at about 400*l.*, and it is still intended to apply the power to other purposes.

From this wheel, and from another small carrier, which is made to pass immediately under the farm-yard (where all the urine and moisture that runs from the manure is carefully collected in a reservoir, which overflows into the carrier), the water has been conducted over lands—principally uplands—containing altogether 89 acres, at an expenditure of only 224*l.* 4s. 10d.: by which an improvement of 2*l.* per acre has been effected, or 178*l.* per annum. This is Mr. Bright's calculation; but is difficult to estimate the importance of such an acquisition as 89 acres of productive water-meadow to a large farm like this, on which there is (especially on the upper part of it) a great quantity of very dry and thin soil. I know no other place in which drain-water has been turned to such good account; luckily the water is all soft, and good for irrigation.

SUMMARY.

TOTAL EXPENDITURE.

	£	s.	d.
Under-draining, as per statement....	1508	17	4
For erecting water-wheel and machinery....................	1000	0	0
Irrigation	224	4	10
	2733	2	2

TOTAL INCREASE IN VALUE COLLECTED.

	£	s.	d.			
Lands under-drained, present value......	689	13	1			
Original value........	254	10	9			
				435	2	4
Estimated saving by the mill.....				400	0	0
Increase in value of water-meadows				178	0	0
Being an increased annual value of..				1013	2	4

resulting only from draining 467 acres, and employment of the drain-water over 89 acres of land; *affording a clear annual interest on the outlay of full 37 per cent.!*

The *subsoil draining*, or *mould-plough*, is a valuable implement in the operation of drainage; and although the inventors of the various denominations now in use each claim different degrees of merit, yet they all tend to the same object—that of loosening the tenacious substratum, and thus allowing both the water to filter through it, and the roots of plants to spread themselves in search of nourishment. There is, however, much difference of opinion amongst those who have employed it: "Some eminent farmers maintaining that it is lost labour, while others, equally eminent, think that no system of management is complete without it."* There have been, indeed, some extraordinary instances mentioned in the "Transactions of the Yorkshire Agricultural Society," of conflicting testimony on the subject, made by men of equal credibility, whose experiments have shown totally opposite results; but it would seem that this must have arisen from the fact that, although the land upon which their trials were made appeared to be equally stiff, yet the soils were not of the same quality: the one being so much more clayey than the other, that it would run together in a wet season without exhibiting any symptom of having been under-ploughed. The soil should, therefore, be analysed, to ascertain the quantity of *alumen* which it contains; for if so large a portion as forty per cent. of that cohesive substance be found united with the other earths of which it is composed, the operation of subsoiling, without draining, will not, it may be feared, be permanently successful.

If, however, the intention be merely to break through that indurated mass of matter termed "moor-band," or "pan," which is so frequently found imbedded between the upper and lower layers of the soil, the plough alone may have a decidedly good effect; but if the lower layer should contain so much tenacious clay as to be retentive of water, no benefit can be derived from it, unless it be connected with drainage. Of this, indeed, a remarkable instance has lately been related of an experiment made by that very highly-informed agriculturist, the Rev. Mr. Rham; of which the following is an extract.

"The field which was the subject of the experiment was once a portion of the open common in Windsor Forest, and brought into cultivation in 1813. The soil consisted of a very moderate loam, inclined to yellow clay, only a few inches in depth; the subsoil chiefly a stiff clay, but with occasional portions of a very gravelly loam, nearly impervious to water. The land, being slightly undulated, and sufficiently inclined to let off the surface water by means of open drains, was usually dry enough to let the turnips be fed off upon it by sheep; and being pared and burnt, chalked and manured, it bore a fair average of crops. Six acres of this land was subsoil-ploughed in 1838, to the depth of 14 or 15 inches, by the Rackheath plough, which stirred the subsoil 9 to 10 inches deep, after a common swing-plough had made a furrow of about 6 inches. The land was sown with turnips, but, the winter being wet, it was soon necessary to remove the sheep; and the ground—which had been so loosened by the subsoil-ploughing as to hold water like a sponge—was found too hollow either to bear cart-wheels or the tread of horses for carrying off the roots. The operation was, therefore, ruinous to the land, and the only effectual remedy was to underdrain it. This being immediately done with footed tiles, a copious mass of water ran out, and, soon after the drains were covered over, the sheep were returned to the fold; the cart took the daily supply of turnips to the cows; the following crop of oats was nine quarters per acre; the field has been during the succeeding winters as dry and sound as any pasture on the farm; and, according to a recent personal communication, 'there is now standing on it a splendid crop of wheat.'

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* Brit. Farm. Mag. for April, 1841, p. 109; and Journal of the Royal Eng. Agric. Soc., vol. ii. art. 2.

"The conclusion to be drawn from this experiment is," as Mr. R. says, "important; as it shows that, wherever, the subsoil is retentive of moisture, complete under-draining is essential, and the subsoil plough should never be used until the water can run off below. It also shows what an improvement can be made on moderate land by the union of draining and subsoil-ploughing. The cost (which was 5*l.* per acre) is nothing when compared with the result; and," he adds, "I consider the sum laid out on this field as the most profitable investment I ever made." He concludes by saying, "that the subsoil plough does wonders in lands which have a porous subsoil, even when employed by itself; but, *unless its application on stiff wet lands be accompanied with draining, it makes them worse*—keeping in the water which would otherwise run off the surface."*

All farmers are not aware that land, *if meant to be irrigated*, should be in most cases even more deeply drained than common meadow. Although draining and irrigation are apparently of opposite means, they are yet equally beneficial in their effect on the herbage; for *flowing water*, if at complete command, so that it may be laid on and taken off at pleasure, and discreetly used by a skilful husbandman, invigorates and sweetens it, while *stagnant water* fills the sward with grasses of the coarsest character. It is indeed thought by many intelligent graziers to engender an insect which spreads itself over marshy ground, and being there eaten by sheep along with the grass, is supposed to occasion the rot. Whether this be the fact or not, it might be difficult to determine; but it is well known that, if land which is irrigated be not also thoroughly drained, it will, when pastured, occasion that fatal malady. Although no irrigated meadows can be said to be quite safe for sheep in the autumn, they are yet generally considered to be free from danger in the spring: but when the drainage has not been duly performed, they have been known to cause the rot in all seasons; and it has in many cases been found necessary to deepen the drains, for the purpose of completely removing the water.

Some startling facts on this subject are stated in a very interesting publication regarding the extraordinary success of irrigation on the estate of the Duke of Portland, in Nottinghamshire. One of which mentions that ewes and lambs fed upon a piece of land which had been drained in 1826, and regularly irrigated, invariably gave them the rot in spring; until, in 1837, it was more effectually drained, and the out-fall rendered complete: since which all appearance of the disease has ceased.

It is there laid down as an axiom demonstrated by a long course of experiments, "that a complete and perfect drainage of the bottom-water is absolutely necessary; its noxious effects showing themselves at a depth and under circumstances which could hardly be credited by any but those who have actually witnessed them." It then says, "it is not uncommonly held by persons conversant with draining, that, if the land is filled with shallow drains, so that no *top-water* can lodge, and that all *bottom-water* which should rise to the level of those drains should be carried off, then all that is necessary has been done. But if, instead of shallow drains at twenty inches, the case should be put of land well filled with drains at five feet deep, it would be doubted by few that such land would certainly be secured from all the bad effects of bottom-water." The account, however, mentions instances to the contrary, which it is unnecessary to copy; but it concludes by stating, "that to effect a perfect drainage, spring-water pressing upon the land should in all cases be cut off; and, in land to be watered, a more thorough drainage is requisite than for any other purpose:"* the truth of which no one who really understands the business professionally will seriously question; for irrigation adds so much to the springs that, in many cases, the drainage has to be done twice over.

It cannot be doubted that, if all superfluous moisture be removed from the ground, it will promote healthy vegetation, and in a great degree prevent the recurrence of that frequent injury to which the flocks of farmers are exposed by the rot. The herbage will also be found so much richer, that the same quantity of hay will yield a greater amount of nourishment to live stock; and, if sheep be fed upon the pasture, it will strengthen the staple of the wool. Nor is this all: it also checks those baneful exhalations which cause the climate to be so dangerous in the fenny districts, and thus renders it, in every point of wealth, health, and comfort, a truly national object; which, although it may be viewed as a secondary consideration by those who look solely to self-interest, yet cannot be treated with total disregard.[*]

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* See "Experiments on the improvement of Poor Lands," by the Rev. W. L. Rham, vicar of Winkfield.—Journal of the Royal Eng. Agric. Soc., vol. i. art. 30.

* John Evelyn Denison, Esq., on the "Duke of Portland's Water-meadows at Clipstone Park."—Journal of the Roy. Eng. Agric. Soc., vol. i. art. 39.

See also the Quarterly Journal of Agric., vol. v. p. 503, in which an instance is mentioned of a large tract of land, which was constantly fed during fifteen years by ewes and lambs, without any symptom of rot; but after being irrigated and partially drained, although a great improvement was made in the quantity and quality of the herbage, yet, so far as the rot is concerned, it has been equally fatal to every sheep fed upon it.

These observations may perhaps be thought needless; for the advantages arising to the soil from its melioration, by *thorough under-ground drainage*, are now so justly appreciated by its occupiers, that they universally consider it as the standard basis of all essential improvement in the land, and the main-spring of what may be distinctively termed "good husbandry." But so much depends upon the nature of the soil and subsoil, and the inclination of the strata, as well as the various localities of the lands intended to be drained, that it is difficult to lay down rules for the process. It is, therefore, not to be wondered at that they do not agree as to the best modes of effecting it: some using stone, or rubble, brushwood, peat, turf, or any substance which may be at hand and obtained at trifling cost, and filling those "rumbling drains," as they are called, with rubbish; without calling in the aid of a practised land-surveyor to lay them down at the proper distances, depths, and levels, to render them efficient; imagining that in saving a little expense they are gainers, though in fact they frequently thus expend their time and money to little good purpose, and verify the homely adage of being "penny-wise and pound-foolish."

Every farmer who is familiar with the use of the spirit-level, conceives himself competent to the drainage of his land without the assistance of a surveyor; and, in cases applying solely to clays and surface-drains, the object is generally well effected. But, in springy soils, the springs must be sought for wherever they can be discovered, and the water carried from them in efficient conduits at whatever depth they may be found; for if the water be forced to find its way through the earth without artificial assistance, the greater portion will remain there in a stagnant state: thus turning good land into bad, and causing the injury to which allusion has already been made. This, however, demands more scientific knowledge than most farmers possess; and if they have land of that nature to drain, they will do much better to employ a professional man to commence and superintend the work, than to rely upon their own judgment, and thus, perhaps, injure their land by unskilful management. In being thus guided by a person who is in the constant habit of laying out drains, and who has the opportunity of observing their operation and effect in every variety of situation and soil, they will assuredly find that many errors inseparable from first trials will be avoided, and much expense saved in the prosecution of the practical details; while his charges will be but trifling in comparison with the advantages which will probably be derived from his directions.[*]

Of this any one who is aware of the great difference in the nature of soils must be sensible, if he reflects for a moment upon the steps which should be taken previous to the drainage of an estate. First the surveyor has to make himself accurately acquainted with both the nature of the adjoining land, and its inclination, if it be higher than that to be drained. He should then measure the extent, and carefully examine the different strata, of every field of which the latter may be composed; taking at the same time the levels of each, and using the auger freely for the search of under-ground springs. He will thus be enabled to ascertain the proper distance and the requisite depth of the main drains, together with the number of cross-drains as feeders; each of which should be distinctly marked out upon a plan of the ground. The price of labour and materials being known, a correct calculation may then be made of the probable efficiency and cost of the operation; from which the farmer may make up his mind as to the expediency of undertaking it, without being heedlessly drawn into those losses which have been so often occasioned by inexperienced drainers. If determined upon, the object is not unfrequently carried into effect by labourers who undertake the work "by the job." It is however so much their interest to slur it over with as little trouble as possible, that they must be more than commonly honest if they do not endeavour to cheat their employer by doing it imperfectly. It is, therefore, perhaps better to employ day-labourers; but, in either case, the operation should be committed to the inspection of some steady fellow, who must take care not to allow a foot of drain to be filled up without closely examining the manner in which it has been done.[†]

A great degree of local observation regarding the nature of the ground, combined with practical knowledge and skill in the execution of the work, is requisite in cutting off the water of the springs at their source. If not done effectually at first, the drains must afterwards be deepened at considerable additional cost; whereas one deep drain, if judiciously placed, will generally preclude the necessity of any other, and, should any doubt be entertained respecting the proper depth, the safest way is to make it rather too deep than too shallow.

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[*] "The hurtful effect of rime, or hoar-frost, on vegetation is a circumstance familiar to all who have had experience of cold elevated districts, or of lower land subject to exhalations, and is found, even in the warmest seasons, to be productive of serious inconvenience to the growing crops, and that chiefly at the period when the grain is approaching to its maturer state. This evil, it may be said, has been removed by drainage, and is now so little felt, that the grain produced in the very hollows has for many years escaped the smallest perceptible injury from this cause." See Black's "Account of the Drainage of an Estate in Berwickshire."—Prize Essays of the Highland Soc., N.S., vol. i. p. 234.

[*] See Black's "Account of the Drainage of the Estate of Spottiswood," Prize Essays of the Highland Soc., N.S., vol. i; and "Thoughts on Fertilizing the Soil."—Quarterly Journal of Agric., N.S., vol. vi.

[†] "The doing the work insufficiently is often nearly as bad as the leaving it undone. The defects of half-draining frequently cannot be discovered until a great loss has been sustained, and to remedy such defects it is for the most part necessary to make new drains entirely, which generally cost as much, and in many cases more, than the first outlay." "As an instance in point—the expense of lifting drains which had been imperfectly formed in a field on the estate of Lord Strathallan, in Perthshire, and which had thus stopped or become *blown*, and the water forced to the surface, was 16*l*. 10s., and the cost of new drains was only 13*l*. 14s."—Stephens on "Furrow-Draining," Quart. Journal of Agric., N.S., vol iii. pp. 291, 292.

This, however, applies solely to those *main-springs* which lie far below the surface of the ground, for the injurious effects of *land-springs* are, as already observed, very commonly remedied by open drains. As these are apt to be dried up in summer, the farmer is, notwithstanding, often reconciled to bear with their pernicious consequences, and we thus see vast tracts of meadow left by this practice in a state of marsh : though it is a very ill-judged economy, as the expense of drainage would soon be repaid by improvement in the sward.* Whether these springs be perpetual, or only temporary, they should, therefore, be diverted from the surface either by open or under-ground drainage ; and the latter, as being the most effectual, will, in the long run, be unquestionably found the cheapest.

(*To be concluded in our next.*)

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—I have been the occupier of a farm of about 250 acres for the last twenty years, in the Torrington agricultural district. My farm is of three descriptions of land : about 20 acres of meadow land, chiefly dry, very little water ; about 80 acres of arable, not of the best quality ; and about 150 acres of moor land. In the early part of my day I was on a larger farm, and am also at present.

Being in the habit of frequenting the fairs and markets in the north of Devon—that is to say, South Molton, Barnstable, and Great Torrington—I have always seen, in my opinion, in those fairs and markets *three qualities* of the North Devon breed of cattle.

The first quality have fine long wax horns, thin and fine skin, beautiful red curly hair, are small in their bone, do not get largest in their size, but will get the most meat in the least time.

The second quality have long horns, some with a little black top, a thin good skin, with dark red curly hair, are larger in their bone, and make the largest bullocks.

The third quality : their horns have black tops, and some short in their horns, a thick skin and straight hair, and are large in their bone.

At South Molton fair I have seen the greatest number of the first quality ; and at Barnstaple, the cattle is of the second description.

In this district many farmers go to South Molton, and purchase bulls to breed from ; which is required—otherwise the cattle would degenerate in quality.

In this district, the major part of the estates are much like mine, having a large quantity of moor land, clay, low poor soil, and the arable greatly in tillage, and more calculated for breeding of cattle than grazing. Young cattle, if summered on the moor land, make but very little growth, and are very short in their horns ; such being the case, a great number of farmers put their cattle to summering in the neighbourhood of Barnstaple, that land being more valuable for grass than for tillage.

I have for many years sent cattle to Barnstaple for summering, some about two years old, and they have come home in fine condition, made great growth, and with the finest curly coat that can be. The next summer I have kept them home, and at the end of the summer they have not made the like growth, were not in the like condition, and had lost the curly coat. In this district, as the arable land is kept greatly in tillage, we have very little old land, and a great quantity of land is low and cold.

In the Barnstaple district there is less in tillage, the land is high and healthy, and more old land, which is best for cattle. Young cattle on low land are found to be unwell more than on high land, particularly in the beginning of the summer, owing to the change of weather, and going from their houses and linhays, having lost their old coat; and also in the autumn, when the long nights and heavy rains come on, the young cattle ought to be taken from the low land, otherwise they will get chills, felling, and other diseases, and be lost ; all which is more likely to happen to the highest breed than the others. The cattle will show the farmer, if seen early in the morning, particularly in the autumn, as you will find them laying, or see they have lain, on the highest and driest part of the land that they are kept in, which is plainly telling you what they like, or what is best for them.

In this district we are in the habit of growing more turnips than some of the adjoining districts, and young cattle are fed with turnips as well as other cattle when the crop is abundant. Now I am of opinion that many people give their cattle too large quantities, which is injurious. It will cause them to loose their old coat before the warm weather is come ; it will give them a looseness ; and when they have so many turnips, you will find that they will not make use of much straw or hay.

If a bullock has many turnips, so as to fill its belly at once, it will not eat hay or straw ; and then in laying down in a cold winter's day or night, what will be the consequence—of course a chill, looseness, and disease ; therefore, I have always found that great attention should be paid by the farmer in this case, looking well after the person who feeds them.

I have many open linhays for young cattle, with stalls for them, racks for their hay or straw, and a manger for turnips. I have practised giving young cattle (two years old) three pecks of turnips a day, to be given morning, noon, and evening ; having about that quantity, they will make use of hay or straw, and do better than having more.

In this district, the cattle from two to three years old and upwards, are what is called store cattle, and in the winter are by day put from their linhays and houses to the moors belonging to the farms, where there is but very little for them to gather. You will see them when so turned out, if the morning be fair, walk over the moor and turn round and come to the gate where put in, and stand at the gate waiting the greatest part of the day to be let to their linhays again ; and if the morning is not fair, they will remain near the gate, standing many inches or half way up the leg in dirt in the storm of rain or hail—this is the way to have poor cattle.

I have done so myself before now, but at present

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* "There is a field on the estate of the Earl of Leicester, at Longford, in this county, which some years ago was occupied by Mr. John Sherratt, and brought forth rushes in such abundance that he gave leave to anybody who would be at the trouble of mowing to carry them away. Three years ago the field was drained ; and this year we are told the present occupier, Mr. T. Robinson, has cut three tons an acre of as nice herbage as ever grew."—Derbyshire Chronicle, 25th July, 1841.

I have them kept in their linhays, and give them three pecks of turnips a day, and wheat and oaten straw ; by so doing, my cattle are much better, I can clearly say, and I can assure any person that at present they are one pound upon ten better than before when put to moor in winter. By this means I get more dung, sufficient to pay for the extra attendance ; the land is much better by not being trod in the winter. I have grass much earlier, and a greater quantity for my cattle to go to in the spring. I do particularly recommend it to be done after Christmas, if not before. It has been recommended by a member of this Society, to grow as many turnips as we can ; I recommend that we grow as much hay as we can.

I have noticed that a great many farmers put a load of dung on four yards of land, that is, forty loads per acre, which is a great quantity to be laid on grass land at once ; and particularly as I have noticed they do not spread it regularly nor brush it in, but let it remain in large clods until it has destroyed some of the roots of the grass ; what is the produce then ?—a very different herbage.

Dry meadow requires manure often ; I always put twenty loads per acre, and manure every acre every year, having it regularly spread and well brushed after. It may not be convenient to dress all your meadow land at once ; you may not have sufficient quantity of manure, or you may not be able to part with the pasture of them all at one time. I dress one half of my meadow about February, and the other immediately after the hay is carried. If this be adopted, you will grow more hay, you will not weaken the root of grass by laying an over quantity of manure at a time, and your meadow will be in good condition, and have the same quantity of manure as putting 40 loads per acre once in two years.

Torrington March market for cattle is considered one of the finest markets in Devon. I have heard it disputed that there is but one that is equal to it, that is—Crediton, in April. I have generally sent 4 or 6 steers to this market, as is the custom of my neighbours. Some years since, the Duke of Norfolk's bailiff used to frequent the market ; I sold my steers to him for years. About ten years since he had my steers, and told me that he kept one of them from March market, (that is, the third Saturday in March) to Christmas twelve months, and then sent him to Smithfield Cattle Show when he won a silver medal for the best Christmas beef. I enquired of him what weight the steer was ? He told me that it was 97 stone, that is, 67 score, 18 pounds. When I sold the steer, he was about 3 years old ; the bailiff and myself then calculated his weight to be 36 score, consequently it had gained 31 score 18 pounds in twenty-two months.

About twenty-six years since, the Duke of Bedford bought twelve North Devon oxen, and twelve Hereford oxen, the best that could be got, costing near 40*l*. each ; when bought, they were together for a trial as to which would feed the best. This was about the time of the battle of Waterloo, and being obliged to go to Plymouth on barrack duty, the day that I was in Tavistock on my march, those oxen were to be sold ; they fattened on grass, hay, turnips, barley-meal, and oil-cake. They were purchased by the contractor for the army and navy, and killed at Plymouth ; I was there, and saw them weighed. The Devons proved the thickest, finest beef, and the greatest weight according to their size. I have seen 36 oxen killed one morning, and weighed the next. I used to attend this house all the time that I could be absent. I made many small bets with the master of the house as to the weight of the cattle, seeing so many killed a day ; at first I was beaten more times than I won, and particularly more on some cattle than others. From the kindness of my opponent, he gave me a few hints, one of which was, for me to enquire where the cattle came from before I made a bet on them — whether they came from North Devon, Cornwall, or South Hams. Having 36 at a time to kill, they had many from each place. He informed me that he always made a difference in calculation in the weight of the cattle, as to where they came from, that is, —if a North Devon bullock and a Cornish bullock were both of one size and fatness, that he made a reduction on the Cornish one of a twentieth less in weight than the North Devon, and the like reduction on the South Ham bullock. After being informed of this, I became an equal judge to my opponent.

To conclude, sir, I beg to inform you that I have now in my possesion a spayed heifer about 4 years old, bred and feeding by me, intended for next Christmas beef; and I will venture to say that she is or will be, provided nothing happen to her, as good as any one in the district—I am almost inclined to say, the county—for one sovereign. She has the finest appearance of an ox, with the most and finest beef for a heifer of her age.

Langtree, July 17. S. BONIFANT.

IMPORTANT INVENTION IN MACHINERY.

Our attention has been called, by an article in one of the provincial newspapers, to a very important mechanical invention, for which a patent has recently been granted to two Scotch gentlemen, and which promises to effect a greater and more benefiicial change in the working of machinery, than has taken place since the brilliant discoveries of Watt. The two great drawbacks of the steam-engine (besides the large space it occupies) have been the *bulk*, and the consequent *expense* of the fuel which it requires, the latter preventing its application to many purposes for which it would otherwise have been a most effective agent ; and the former impeding its locomotive energy, and confining it, particularly as regards navigation, within comparatively narrow limits. Any reduction in either of these respects is thereby obviously so much *clear gain*. The invention to which we allude, promises to effect a prodigious saving in *both*, by diminishing the expenditure of fuel to somewhat less than *one-fifth* of what is now required for an equal degree of power. It has already, we are informed, been put to the test by the construction of an engine of about 20-horse power, which has for some time been driving all the machinery of an extensive foundry with no larger consumption than we have just mentioned, and with every prospect of a considerably greater reduction being effected by some slight changes in the details. The motive power used is the common atmospheric air ; and another great advantage of the new engine arises from a saving of space, equal to what is usually occupied by the furnace and boilers of a steam engine.

If these things be so, it is impossible to calculate the results to which so important a discovery must lead. But we hasten to present our readers with the following description of the engine, which we have abridged from the newspaper already referred to.

DESCRIPTION.

The air-engine now working at the Dundee Foundry, for which a patent was lately taken out, is the joint invention of the Rev. Dr. Stirling, of Galston, and of his brother, Mr. Stirling, engineer, Dundee.

The principle of the invention consists in alternately heating and cooling two bodies of air confined in two separate vessels, which are so arranged that by the strokes of two plungers, worked by the engine, the whole of the air contained in one of the vessels is sent to the lower end immediately over the furnace, and is consequently made quite hot, while the whole of the air contained in the other vessel is at the same time transmitted to the upper end, which is cut off from any communication with the furnace, and is therefore comparatively cold.

The expansion caused by the heat, renders the air in the one vessel alternately much more elastic than that in the other; and the two ends of the working cylinder, which is fitted with a piston similar to that of a steam engine, being respectively connected with the two air vessels, a preponderating pressure is produced, by turns, on each side of the piston, which is thereby pushed to the opposite end of the cylinder; and so, by the alternate action of the plungers in the two air vessels, it continues a reciprocating motion, and is applied to turn a crank in the same way that a steam engine does.

It has been satisfactorily shown that this engine may be worked with very great economy of fuel as compared with a steam engine. The principal means of producing the saving is this—that of the heat which is communicated to the air from the furnaces, only a very small portion is entirely thrown away when it comes again to be cooled; for, by making the air, in its way from the hot to the cold end of the air-vessel, to pass through a chamber divided into a number of small apertures or passages, the great extent of surface with which it is thereby brought in contact, extracts from it in the first place, but only temporarily, the greater part of the heat; and afterwards restores it to the air on its passage back again from the cold to the hot end of the vessel. The process of cooling is finally completed by making the air pass through between a number of tubes in which there is a current of cold water, and thus far the heat cannot be made available again, but the portion which is abstracted in this way is very small.

As a sufficient expansive power could not be attained in so small a space without great alternations of temperature from using air of the common density of the atmosphere, the air used is pretty highly compressed, and a much greater power is thereby obtained upon a given area of the piston.

A small air-pump, worked by the engine, is therefore necessary to keep up the air to the requisite density; but very little power is expended on this; all that is required of the pump, after the engine has been once charged, being to supply any loss of air that may arise from leakage, which is found to be very trifling.

The machine has been working occasionally for above six months, and it has been proved to be capable of performing advantageously the amount of work which the inventors had anticipated from their calculations and previous experiments. It has now for upwards of a month been driving all the machinery at the extensive engineering works of the Dundee foundry, which a steam-engine of approved construction had hitherto been employed to do; and it has been ascertained that the expenditure of fuel is *cæteris paribus*, less than one-fifth part of what was required for the steam-engine; but as considerable improvements are contemplated in some of the details, it is confidently expected that a much greater saving will eventually be effected.

The whole machine, including its furnaces and heating apparatus, stands in about the same space that a steam-engine of equal power would occupy without its furnaces and boiler. Taking into account the saving of space along with the vast economy of fuel, this invention must necessarily be of immense importance for all ordinary purposes requiring motive power. As an instance, it would reduce the expense of the power employed in driving machinery in Dundee alone by at least £25,000 or £30,000 a-year. But viewed in reference to the purposes of navigation, it must lead to results still more extraordinary, and will render a voyage to India round the Cape by machinery, a matter of perfectly easy accomplishment.—*Times.*

TO THE PRESIDENT AND COUNCIL OF THE ROYAL AGRICULTURAL SOCIETY.*

Gentlemen,—Having with much pleasure observed from the reports of your Council, that two days are to be allowed for the exhibition and inspection of stock at our Liverpool Show, and also one whole day devoted to the ploughing competition, permit me very briefly to suggest:—1st, with regard to the show of stock. That as the object of our society is not merely the encouragement of the best breeds, and the publicly rewarding those who, by their exertions and skill, have produced the most valuable animals, but also the instruction of those attending our shows to obtain information, and increase thus the agricultural knowledge of our country; therefore that all prize animals, and at least one in each class of the inferior ones be selected, and to each a ticket be conspicuously affixed—such ticket to state those points of excellence in the one, and the defects of the other—which have decided the opinions of the judges. It will be allowed by all who frequent agricultural shows, that of the hundreds who press forward to inspect the stock, but few are capable of observing those points which have procured the approbation of the judges, or the reverse; and however anxious our young breeders may be to increase their knowledge as to the perfections or defects of the various animals, they have no other guide than their own conjectures afford. To obviate this, I last year at Aberdeen, at a meeting of our Highland Society preliminary to the show, made the same proposal as that now stated, and its advantages were unanimously allowed; but on consideration, the time between the decision of the judges and the admission of the public was found too short to allow the proposition being properly carried into effect. At Liverpool, however, the same objection cannot occur. If the tickets are ready—having blanks left to be filled up with the judges' remarks—the whole time occupied, would not exceed half an hour—a loss not to be put in competition with the gain in information afforded to all attending. I would also propose that, as but a small portion of those visiting the show have any object beyond ocular amusement, and by crowding must prevent those really anxious for information from such a calm and undisturbed inspection of the animals as they very properly desire, that a certain time should be named and devoted to the admission only of those seeking instruction; which perhaps could best be accomplished by raising the admission price for that period—a thing which would not be grudged by any one aware of the advantages derived from undisturbed inspection. Complaints too being often made by the exhibitors of the injury sustained by their animals, from the rough handling of the inspectors, I would suggest that no handling should on any account be permitted, except during the time when the extra admission price is demanded; when it may be easily supposed that those junior agriculturists, anxious solely for information, and most of them already somewhat versed in the proper treatment of animals, would not do that injury which might naturally be dreaded from the rough hands of the totally uninitiated crowd.

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* So much of this letter as refers to the stock, was laid before the Liverpool Committee, by whom it was thought that the suggestions could not be carried out.

2nd. With regard to the ploughing competition, the increased time and amount of prizes allowed for it must be highly approved by all; but, at the same time, it will be acknowledged by every *practical* agriculturist, that there is no possibility of deciding in one day, or on one kind of soil, which plough ought to be recommended by our society for general adoption. The trials which have already taken place—first under the inspection of our late talented president, Mr. Pusey, and since then by many others almost equally competent to judge—have not, as yet, by any means satisfied the public that any of the novel improvements lately introduced are worthy of a general adoption. Yet is there anything which could be of such real value to our country, as our society presenting a plough, authorised by its correct trials to diminish half or even one-third the labour now required from every cultivator. The worth of such a donation from our society could more easily be guessed than calculated. I therefore propose that after the Liverpool competition, a special committee be appointed, with instructions to procure a collection of such ploughs as in the many late trials have appeared superior; and that a series of experiments be made on every variety of soil and elevation, so as to enable them ultimately to come to a decision. Each year, as we may judge from the vast variety of new ploughs recommended to the notice of the public within the last few years, new improvements will continue to be suggested; and to prove their value, the committee ought to be continued and standing, for the purpose of ascertaining yearly the real value of such novelties, and giving the benefit of the information gained to the public.

I fully acknowledge the difficulty of deciding which are to a *certainty* the best ploughs for the variety of soils which exist. I know well the time and careful attention which must be devoted by any committee to performing their duty thoroughly; but when we think of the value of ascertaining which ploughs can perform the work required with so greatly diminished a draught as is generally believed can take place, and has indeed been proved can be accomplished, I have not a doubt but that our society can find abundance of members fully qualified, able, and willing, to perform the important task allotted to them—sensible, as they must feel, that any outlay of the society's funds must be more than amply repaid, and that the vast benefit conferred on their country will more than *mentally* remunerate them for all the trouble of their investigations.

I offer the above suggestions in the hope that, however they may be received, it may be believed that they are proposed from a desire for the improvement of our country, and a wish to further the objects of our great and influential society.

I am, faithfully yours,

Coggeshall, Essex, June 29. F. A. Mackenzie.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—Since writing the above, the Marquis of Tweeddale stated publicly at the Berwick meeting of the Highland Society, that the trial of ploughs as proposed by me at Aberdeen, in 1840, had been made in the most perfect manner; and that the old Scotch swing plough had, on the whole, proved itself the best suited for that country. This is so opposite to the report given by Mr. Pusey, our late president, who, after various trials, pronounced that whilst Hart's and his own plough only required a force of 11 and 13, the two Scotch swing ploughs required 18and 19. I hope no delay may now take place in our Royal Society appointing a committee which may, after the fullest trials, settle the question as to which ploughs are best on the different soils; and not allow our agriculturists any longer to waste double the force required for a proper plough by using an inferior implement. As I before said in my letter of the 29th of June, the good conferred on our farming interests by a diminution of even one-third of the force now required in ploughing, may be more easily believed than calculated.

Your's faithfully,

Clapham Common, Oct. 11. F. A. Mackenzie.

SUSSEX BREED OF STOCK.

(FROM THE SUSSEX EXPRESS.)

We have had occasion to observe on former occasions that Sussex stock have greatly suffered in the estimation of the public, from the want of patronage afforded to it, and equally so from their qualities being comparatively unknown. The short-horns and the Herefords have had strenuous advocates in writers of acknowledged character, and for many years each of these breeds has been fostered by the patronage of great men. We are not prepared to say that these breeds are not valuable—most valuable in the districts where they are fostered. We will not contend, if the districts around Mayfield and the eastern parts of Sussex and West Kent possessed the rich pasturage of the parks of the Earl of Spencer, that the short-horns would not be much better adapted for such a description of land than Sussex stock is; but what we do contend for is, that our native stock is equally as valuable as any other breed for the county in which they are bred. As well might it be said that Leicester sheep are adapted for the Southdowns, as to judge of Sussex stock by the same rules as those in estimating the value of the short-horns. The Sussex stock, as working oxen, stand unrivalled, and in quality of meat when fattened are equal if not superior to any other breed. Animals brought early to market furnish a means whereby quantity is gained in a lesser period, but to some extent it suffers in quality. Take a haunch of five-year old wether Southdown sheep well fattened, and when placed on table with a similar one of two years, none will say but the older is richer in quality, in fineness of grain, and in gravy, than the one early matured. This argument stands good with neat cattle, The meat of a worked oxen is very superior to that of a lesser aged short horn- it is shorter and full of matured flavour. When the fattening quality has been duly attended to in the breeding of Sussex stock (which it can be without detracting from the working powers of the animals), finer beef cannot be brought to the shambles than that furnished by the Sussex herds. These qualities of our home-breed have been overlooked or disregarded by writers; and, in fact, until within the past four or five years the public have, to some extent, neglected the circumstance of Sussex possessing a breed peculiarly its own. Nay, more; the county of Devon was fixed upon as the original district from which the breed was brought, thus robbing the county of Sussex of its just pretensions. Having elicited the opinions of first-rate agriculturists upon this subject, we considered it our duty to repudiate the published opinions of writers who had thus detracted from the just claims of this county, and last year furnished an article relative to it, proving that the breeds of Devon, and even those of Hereford, originally sprung from Sussex. It is not our intention here to enlarge upon this subject, but merely introduce it to show how much injury may be done by writers who hastily draw inferences from undigested and ill-considered facts. Having repeatedly brought forward the merits of Sussex stock before the public, it is with no slight satisfaction we view the results which have attended the publication of them. Had this been done many years ago, not an agriculturist would have been hardy enough to hazard the opinion pronounced upon them by Earl Spencer, and which we believe has since been withdrawn by that nobleman. The results of which we have spoken have been made manifest this year in the sales of stock at Westfirle, the property of the late respected Mr. Putland, and at Berwick, the property of Mr. King. Prices have there been obtained, not by any means equivalent to the intrinsic value of the breed, but still much higher than on any previous occasion. As public attention is now drawn to the merit of the breed, we doubt not that for years to come, the prices will advance; and we here append the sums realised at Berwick, with the names of the purchasers. We do this under the impression that at a future period it will be looked to as one of the first steps to a great extension of the breed of Sussex stock.

SUSSEX COWS IN CALF.—A 9 yrs. old, bought by Mr. Shelley, at 37*l.* 10s.; 8 do., Mr. Curtis, 38*l.*; do., Mr. Rason, 20 gs.; do. Mr. Cruttenden, 21½ gs.; 6 do. Mr. R. Wood, 32½ gs.; 5 do., Mr. Cane, 23 gs.; do., Mr. Dunk, 22 gs.; do., Mr. Pix, 25 gs.; do., Mr. Shelley, 50 gs.; do., Mr. Pitcher, 23*l.*; 4 do., Mr. Selmes, 23 gs.; do., Mr. Chatfield, 33 gs.; do., Mr. Shelley, 33 gs.; 3 do., * Mr. Watkins, 60 gs.; do., Mr. Chatfield, 21½ gs.; do. Mr. Shoosmith, 30½ gs.; do., Duke, 29 gs.; do., Mr. Richardson, 32 gs.; do., Mr. Watkins, 71 gs.

SUSSEX HEIFERS.—A 2 yrs. old* bought by Mr. Chatfield, 47 gs.; do., Mr. Curtis, 44*l.*; do., Mr. Hilder, 41*l.*; do., Mr. Watkins, 38 gs.; do., Mr. Pix, 41*l.*; do. Mr. Curtis, 52 gs.; do., Mr. Chatfield, 40 gs.; do., Mr. Pitcher, 25 gs.; do., Mr. Watkins, 31 gs.; a yearling, Mr. Smith, 25½ gs.; do., Mr. Wickens, 21½ gs.; do., Mr. King, 15 gs.; do., Mr. Shelley, 27 gs.; do., Mr. Smith, 31 gs.; do., Mr. Wickens, 18 gs.; do. Mr. Fuller, 36½ gs.; a calf, Mr. Denman, 16 gs.; do., Mr. Shelley, 20 gs.; do., Mr. Rason, 25 gs.; do., Mr. Shelley, 19 gs.; do., Mr. Rason, 17 gs.; do., Mr. Langford, 12½ gs.; do., Mr. Langford, 20 gs.; do., Mr. Fuller, 10 gs.; do., Mr. Rason, 11 gs.; do., Mr. Denman, 15½ gs.; do., Mr. Shoosmith, 12½ gs.; do., Mr. Langford, 15 gs.; do., Mr. Darby, 8½ gs.; do., Mr. Denman, 17 gs.

WORKING OXEN.—Pair 6 yrs. old, bought by Mr. Wickens at 42 gs.; do., Mr. Grantham, 54*l.*; do., Mr. Mr. Grantham, 51*l.*; do., 5 yrs. Mr. Grantham, 63*l.*; do., Mr. Wood, 53*l.*; do., 4 yrs., Mr. Watkins, 53*l.* 10s.; do., Mr. Watkins, 44½ gs.; do., 3 yrs., Mr. Watkins, 47*l.* 15s.; do., Mr. Tempsett, 45*l.*

STEERS.—Three calves, bought by Mr. Cane, at 21 gs.; 2 yrs. old, Mr. Morris, 20*l.*; pair 2 yrs. old, Mr. A. Smith, 50*l.*; do., Mr. Tompsett, 43*l.*; do., Mr. Morris, 43*l.*; do., Mr. Morris, 42*l.*; do., Mr. Tompsett, 40*l.*; do., Mr. Grantham, 42*l.*; do., Mr. Tompsett, 30*l.*; yearling pair, Mr. Grantham, 31*l.*; do., Mr. Boys, 25*l.*; pair of calves, Mr. Selmes, 18*l.*; do., Mr. Selmes, 18*l.* 10s.; do., Mr. A. Smith, 17*l.*

BULLS.—A 5 yrs. old*, bought by Mr. Watkins, at 52 gs.; calf, Mr. H. Smith, 25 gs.; do., Mr. Denman, 42 gs.

FAT STOCK.—A cow, bought by Mr. Paine, at 24½ gs.; do., Mr. Morris, 30 gs.; do., Mr. Paine, 26*l.*; do., Mr. Paine, 28*l.*; heifer, Mr. Paine, 25*l.* 10s.; do., Mr. S. Shoosmith, 24*l.*; pair of oxen, Mr. Paine, 65*l.*; do., Mr. Morris. 63*l.*; do., Mr. Morris, 61*l.*

WITNEY FARMER'S CLUB.—This institution, which has been increasing in numbers and rising into general approval and great usefulness within the last year, had a large attendance at the last monthly meeting on Thursday, the 30th of September last, at the Crown Inn. The discussion was an interesting one, from the number of the intelligent members taking an active part in the debate upon the question for the evening, "the culture of turnips," which question has been repeatedly adjourned during the harvest-months; this evening it was brought to a termination. The debate was opened by the Vice-Chairman, Mr. Henry Bateman, who detailed his practical course of turnip-planting, and the results upon the different soils upon the joint estate of himself and his brother, which met with deserving approbation and applause. He mentioned, as particularly deserving attention, the selection of seed, that failures, often attributed to the fly and other causes, were traceable to the mixtures of old and bad seeds, and that by using seed of home produce it was not only more to be depended on, but the growth of the plant was more rapid and luxuriant than from market seeds. This is a most important point, as the more rapid the growth of the plant, the less liable is it to the destruction of the fly and other causes of failure. Mr. J. Gillett, of Brize-Norton, who proposed the question, and whose arguments have had a considerable effect on previous meetings, continued with other members the interesting discussion, which terminated upon a resolution—"That in adopting rules for the practical culture of turnips, the different degrees of quality of the soil must govern the system of cultivation. That the results of experience must determine the best course adapted to the nature of the land under cultivation. That the different courses of management as detailed by the different members, must tend to enlighten the advocates of each system."

ST. COLUMB FARMERS' CLUB.—The usual monthly meeting of the members of this useful club was held on Monday, Oct. 11th, when Mr. T. Glanville delivered a lecture on "the best means of preventing the wire-worm in wheat." The lecturer commenced by saying that he was highly gratified by the great interest excited on the occasion, and he confidently anticipated that he should see the day when the St. Columb Farmers' Club, now in its infancy, would exceed, in improvements, any club in the county. The subject which he was called on to introduce was particularly interesting to him, as the late occupier of his farm suffered immense injury from the ravages of the wire-worm on his wheat; but that since his occupying the farm, he had, by attention, succeeded in arresting its progress, and he was now enabled to produce crops equal to any of his neighbours. He observed that the superior condition of the farms, compared with what they formerly were, greatly favoured the progress of the worm in attacking the wheat plant. Agriculturists should pay particular attention to stopping the progress of this destructive insect where the ground was infested with it, early in the spring, about the months of March or April being the time when the most mischief was done, although in a dry season the effects were visible much earlier. Pressure, by treading and rolling, were the only methods he was acquainted with for that purpose, and this was of great service in

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Those lots marked thus (*) obtained prizes at the great Liverpool Show.

preventing mildew. His plan was to cart his turnips to his wheat lands, where the wire-worm appeared, for his sheep and oxen, which should be done before the land becomes too dry; and he also made use of the roller in some cases. He concluded by saying, that he left the further discussion of the subject in the hands of the meeting, but he should be most happy to answer any question put to him by the club. In the course of the discussion which ensued, Mr. W. Drew, (Crigos) stated, that last April, he perceived the worm doing great injury to his wheat field, and he put in a flock of sheep, which he kept driving to and fro the whole day; after which, though the ground was very wet, and the clods stuck to the roller, he rolled it, and in a few days after, "brushed" it, which proved effectual in stopping the progress of the worm. The meeting ultimately arrived at the following conclusion:—That from the great attention now paid to pulverising the soil, the progress of the wire-worm appears to be encouraged, and there appears to be no method of preventing injury to wheat but that of pressure by the treading of cattle or rolling; but every agriculturist should pay particular attention to the habits of the insect, and the manner of its production; and it is hoped that those who are acquainted with chemistry may discover what solutions are likely to destroy the insect.

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Meeting of the General Bristol Committee, held in Cavendish Square, on Tuesday, the 5th of October, present, his Grace the Duke of Richmond, Chairman of the Committee, in the chair, Henry Handley, Esq., President of the Society, Colonel Challoner, Chairman of the Finance Committee, Thomas Raymond Barker, Esq., James Dean, Esq., and Humphrey Gibbs, Esq.—

The President informed the Committee that agreeable with the resolution of the Council he had communicated to the Mayor of Bristol the intention of the Society to hold its next Annual Country Meeting, for 1842, in that city; and that he had received a reply from the Mayor acknowledging the communication, and expressing on his own part individually, and on the part of the Corporation collectively, the assurance that the Society would meet from the authorities of Bristol with every possible aid and assistance in carrying out the arrangements necessary upon the occasion.

The Committee then resolved unanimously that in accordance with the instruction given to them by the Council, a Deputation of the Society should proceed to Bristol on Thursday the 14th of October, to wait upon the Mayor, and request his personal advice and recommendation in directing their choice of suitable localities as sites for the Council and great Pavilion Dinners, the Cattle-yard, and Implement ground, and in aiding them in the formation of their opinion on the subject of the general arrangements to be adopted for the Meeting.

His Grace the Duke of Richmond then directed the Secretary to address a letter to each member of the Bristol Committee, informing him of the time the Deputation would leave London, and requesting his attendance on the occasion.

The Committee then adjourned to the White Lion Hotel, Bristol, on Thursday, the 14th of October.

Deputation to the Mayor of Bristol.

The Deputation, consisting of his Grace the Duke of Richmond, Chairman of the Bristol Committee, Henry Handley, Esq., President of the Society, Colonel Challoner, Chairman of the Finance Committe, Thomas Raymond Barker, Esq., Chairman of the late Liverpool Committee, James Dean, Esq., Honorary Surveyor of Works at the Cambridge Meeting, and Humphrey Gibbs, Esq., Honorary Director of the Annual Shows, accompanied by James Hudson, Esq., the General Secretary of the Society, proceeded on Thursday last to Bristol by the Great Western Railway, and on their arrival were received at the Railway station, by William Miles, Esq., M.P., who conducted the Members of the Deputation to the Council House, and introduced them severally to the Mayor, Robert Phippen, Esq., who was in attendance to receive them.

The Mayor having directed the requisite number of carriages to be in attendance, for the accommodation of the Deputation, proceeded himself to conduct his Grace the Duke of Richmond, and Mr. Handley, while the High Sheriff, William Miles, Esq., M.P., and James Marmont, Esq., Secretary of the Bristol Agricultural Society, accompanied the other Members of the Deputation to inspect the various public buildings and sites of ground, which were considered suitable for the objects of the Society. On the completion of this tour of inspection, and having viewed the progress of the works at the Clifton Suspension Bridge, the Mayor conducted the Duke of Richmond through the Prisons of the city, while Mr. Miles accompanied the other Members to inspect the construction of the great "Mammoth" iron vessel, and being conducted by Captain Claxton, and joined by Captain Hoskens (the distinguished commander of the "Great Western") the whole plan of operations connected with this gigantic national undertaking was most fully and courteously explained to the company, by these gentlemen.

The Deputation then proceeded to their Committee Room, at the White Lion Hotel, and, having sat for two hours, decided upon the various localities and sites as most suitable for the purposes of the Society during their meeting; and, having directed application to be made in the first instance to the owners and tenants of the property, they decided that on receiving favourable replies to their applications they should make a report to the Council in London of the highly eligible accommodation of the sites thus selected.

The Deputation then proceeded to the Council House to dine with the Mayor, agreeably with the invitation which had been made through the Duke of Richmond, and accepted by his Grace in the name of the Deputation.

At 7 o'clock the Mayor sat down to dinner, having his Grace the Duke of Richmond and Mr. Handley on his right, and the High Sheriff and Mr. Philip Miles, M.P., on his left, the Town Clerk acting as Vice-chairman; and the worthy Chief Magistrate of Bristol had not only invited the principal members of the corporation and authorities of the city to meet his new guests; but, in order to testify his respect for the Society, had, we understand, issued a *carte-blanche* that no expence should be spared to limit the sumptuousness of the entertainment, and we are happy to learn that his worship's wishes were most successfully executed, and that no deputation were ever greeted with a more hospitable reception or splendid banquet.

The Mayor, in proposing the health of the noble Chairman of the Committee, and of Mr. Handley, as President of the Society, repeated his hearty assurances and hopes connected with the prospective meeting of the Society; and the Duke of Richmond, in a brief, but most impressive and feeling speech, assured the company that representing, as a Deputation of the Royal Agricultural Society might be fairly said to do, the farmers of England, he could distinctly express, on his own part as on theirs, that, friends as they were of the agricultural interests of the kingdom, and impressed as they were that agriculture must form the foundation of our national happiness and prosperity, he could also with the liveliest satisfaction most cordially assure them that they were no less the real friends of commerce and manufactures, having the firm conviction that these great branches of national industry were mutually dependent on each other, and must stand or fall together.

Before the Deputation left Bristol, the Secretary waited on each of the Editors of the Bristol Papers, to inform them severally of the wish of the Committee, that every information connected with the Meeting and the objects of the Society should be supplied to them, on their application to him from time to time at the office of the Society in Cavendish-square.

RURAL CHEMISTRY.

Phosphate of lime is by no means an abundant substance, but it exists in small quantity in a great many substances. Traces of phosphoric acid are found in the soil, in almost all plants and animal matters. It never occurs free, or uncombined, but always in combination with a base; and this is very commonly lime. Thus we always find phosphate of lime in wheat and other grains, which constitute part of the food of man; and we find it in very considerable quantity associated with carbonate of lime in the bones of man, and other animals who obtain it from the substances on which they feed. As wheat and similar plants derive the phosphate of lime, as well as the other earthy salts which they contain, from the soil, it is evident that they must gradually diminish the quantity of that substance contained in the soil; it will therefore become necessary to replenish the earth, from time to time, by mixing with it some substance containing phosphate of lime, and this is done by manuring. All vegetable and animal manures yield phosphate of lime to the soil, and none in so large a proportion as bones, which are likewise useful in other ways besides supplying phosphate of lime to the soil. Phosphate of lime is easily decomposed by the more powerful acids, such as sulphuric acid and muriatic acid: in the former case an insoluble sulphate will be formed, and phosphoric acid left in solution; and in the latter, a clear solution will be obtained containing phosphoric acid and muriate of lime, a salt which is very easily soluble in water.

Magnesia is an earth somewhat similar to lime, but far less common and abundant. It occurs usually in connection with lime, forming what is called magnesian limestone, which is a mixture of carbonate of lime and carbonate of magnesia. The commonest forms in which magnesia is found, are the carbonate, the sulphate, the muriate, and the phosphate. The carbonate is sometimes found native pure, but by far more frequently it is mixed with the carbonate of lime or limestone, the properties of which it considerably modifies. When the carbonate of magnesia is strongly heated, it parts with its carbonic acid, and the pure earth magnesia is obtained. This earth is almost insoluble in water, and far less strongly caustic than lime; it also has less affinity for carbonic acid, so that when left exposed to the air, it does not, like lime, rapidly become converted into carbonate by absorbing carbonic acid from the air, but remains for a long time caustic; and hence when a magnesian limestone is burnt in a lime kiln, the quick lime obtained of course contains caustic magnesia, which, if exposed to the air, will remain caustic long after the lime has all become reconverted into carbonate; it is for this reason that limestone containing magnesia cannot be used for some purposes, where the caustic powers thus retained are objectionable. The carbonate of magnesia, like the carbonate of lime, and indeed all other compounds of that acid, is easily decomposed by any more powerful acid. When acted on by sulphuric acid, sulphate of magnesia is formed, which is a salt easily dissolved by water, and distinguished by a peculiar sweet-bitter taste. It is found in many mineral waters, and exists in unusually large quantity in some springs near Epsom, in consequence of which it is commonly called Epsom salts. The compound of muriatic acid and magnesia is also frequently found in mineral waters, and exists in some quantity in sea-water; it is very soluble in water, and therefore when sea-water is evaporated in order to procure the common salt which it contains, it is never wholly evaporated; but when the greater part has been driven off by heat, and a large quantity of common salt is deposited, the remaining liquor, which contains a little common salt, and nearly all the muriate of magnesia and other easily soluble salts, is drawn off. The muriate of magnesia, and also the muriate of lime, are very deliquescent salts; that is to say, they have a very strong attraction for water, and hence when exposed to damp air, they soon become moist, and at last we find, instead of the solid salt, a very strong solution of it in water. It is to the presence of a small quantity of these two salts in common sea salt that its deliquescent properties before alluded to are due. The phosphate of magnesia, like the carbonate, is seldom found alone, but usually mixed with the phosphate of lime: thus we find it associated with that substance in small quantity in many animal and vegetable matters, and likewise in the soil. The uses of magnesia are limited, and the most important purposes to which its compounds are applied are as medicines.

Alumine, or pure clay, the last of the earthy bases, is a very abundant and widely diffused substance. It occurs native both pure and in combination, but is most usually met with mixed with another earth called silex, and combined with a quantity of water. It is sometimes found pure and free from water or any acid, and constitutes the hard gems called the ruby and sapphire; but these are very rare, and seldom met with. The properties of alumine, in the ordinary state in which it occurs in the soil, are very different from those of the preceding bases; it is quite insoluble in water, has no caustic powers, and does not absorb carbonic acid from the air. It has a strong attraction for water, and when thoroughly wet it appears in the form of a very tenacious paste, remarkable for its great plasticity, and the ease with which it may be moulded into any form. All the varieties of clay derive their tenacious properties from the large quantity of this earth which they contain; and the whole arts of making pottery, bricks, tiles, &c., are entirely dependent on this property of alumine. This earth is able to combine with acids, but the salts which it forms are mostly of very little importance, and we need not at present inquire into their characters. The only one which is found native is the phosphate, but this is by no means of common occurrence: it is only found in certain districts and in very limited quantity. The sulphate of alumine is largely manufactured from certain kinds of slate or shale which contain alumine and sulphur. When sulphate of alumine is mixed with sulphate of potash, the two salts combine and form what is called a double salt—the sulphate of alumine and potash, or common alum. If a little potash is added to a solution of alum, the sulphate of alumine will be decomposed, pure alumine will be separated, and sulphate of potash alone remains in solution.

The only other earth of much importance besides the three already mentioned, is called silex or silica, and is found both pure and mixed or combined with alumine and other substances, constituting in a nearly pure condition, quartz, sand, flint, &c., and when associated with alumine, forming clay and a numerous series of stones, being in fact an essential ingredient of the greater number of the hard stones with which we are acquainted. Silica differs from the preceding earths in not being a base—in being unable to combat with acids; and indeed it has rather the character of an acid, for it is able to combine with the alkalies so much in the manner of acids, that it is by some chemists termed silicic acid. It is quite insoluble in water, and unacted on by the air, and under ordinary circumstances is a very unchangeable substance; when, however, combined with the alkalies, it is easily dissolved in water, and the compound thus formed is sometimes present in very small quantity in mineral waters. The ordinary forms of silica or silicic acid, such as sand or flint, are very little acted on by potash; but when finely pounded, silica is mixed with potash or soda, and strongly heated, they melt and form a clear transparent substance, which is in fact glass. Common glass always contains other substances, but the basis of all good glass is this compound of silica and alkali—either silicate of potash or soda. The proportions taken of the two ingredients are always such that the glass obtained shall be perfectly unacted on by water; but if more alkali be employed than is requisite to form a good glass, a silicate will be obtained which is easily soluble in water. A solution thus made is easily decomposed by any acid, as the potash has comparatively but a weak attraction for the silica, and hence that substance is separated from its solution on the addition of almost any acid. Though potash is scarcely able to combine with silica at common temperature in its usual states, yet when the silica is in an exceedingly fine powder, the alkali is able to dissolve a small quantity; but this action is far slower and less perfect than when the two are strongly heated together.

Silica is almost always an ingredient of the soil, and exists there not only in its solid and insoluble form of sand, but also in the soluble condition of silicate of potash or soda; it will easily be seen that as many stones contain silica, they will, whilst gradually decomposing and crumbling down by exposure to the air, constantly add to the soil silica in a very finely divided state, and therefore well adapted to combine with either potash or soda; and as a number of different stones also contain a small quantity of silica, considerable quantities of silicates of potash and soda are constantly being formed. Silica is likewise found in plants, such as for example corn and grasses, the whole of which mainly derive the strength requisite to enable them to grow erect from the silica which they contain. Plants derive this earth from the soil, and are only able to absorb by their roots the silica which, by having combined with alkali, has become soluble in water, and is consequently able to enter into the structure of the plant. The quantity of this earth thus carried up into plants is very considerable, and it is therefore of great importance to provide them with a sufficient supply of silicate of potash. For if plants like those just alluded to are attempted to be grown in soil not containing silicate of potash or soda, the plants will be weak, and far from flourishing. When a stack of hay or straw has been burnt, so that all the volatile or combustible matters have been dissipated, there is found a large quantity of a dark glassy-looking substance, which consists principally of silicate of potash previously existing in the plants, and which being unaltered by the heat evolved during their burning, is merely melted together with other substances contained in the plants into a glass. This may also very easily be observed by burning a piece of straw in the flame of a candle: abundant white ashes will be left which continue to retain nearly the form of the straw, and which, if kept in the flame of a candle, melt into an imperfect sort of glass, which is principally silicate of potash. The quantity of this substance necessary for the growth of different plants varies much—some, such as the plants used for polishing, commonly called Dutch rushes, contain even more than hay or straw; and cane contains so much silica, that it appears completely coated with flint.

Silica and alumine, which are generally the two principal constituents of soils, differ very greatly in their respective uses. The former is of importance, both chemically and mechanically. Chemically as forming a soluble compound with alkali, and thus being absorbed by the roots of plants, and conferring strength and stability to their structures; and mechanically by diminishing the extreme closeness and tenacity of alumine, and thus, by making the soil more porous and open, allowing the passage of air and water through it, and enabling the roots of plants more easily to penetrate it than they could were it wholly composed of alumine. On the other hand, the use of alumine is principally mechanical, tending to keep the soil moist from its attraction for water, and likewise being highly useful in absorbing ammonia, both from the air and from all decaying substances evolving it in the vicinity, by virtue of that property which many porous substances, and more especially charcoal, possess of absorbing or condensing that gas which, as we shall shortly show, is of great importance in the growth of plants.

Besides the three earthy bases already spoken of, and a few others of far less importance, as they are very rare, and only to be found in particular places, there are a numerous series of bases called metallic oxides, several of which are of great importance in the arts, and one of which is almost always present in minute quantity in the soil. Most of the common metals, such as iron, lead, and zinc, gradually tarnish, and become rusty when exposed to the air; the reason of this is that they have a strong affinity for oxygen, and under these circumstances they gradually become covered with a film of an oxide, or compound of the metal with oxygen. These oxides are mostly bases, and form with acids a very numerous series of salts.

The most widely-diffused and abundant of all the metallic oxides, as well as that which is the most important and valuable in the arts, is the oxide of iron, which exists in different quantities in a great variety of stones, is very common in soils, and is constantly present in very small quantity in the blood of animals. Iron is very rarely indeed found native in its pure metallic state, but is usually met with in the form of an oxide, either pure or combined with carbonic acid, and mixed with alumine and silica. Thus the rich black and red iron ores of Cumberland and other places are nearly pure oxide of iron, whilst the common clay iron-stones, as they are called, of Staffordshire and Wales, are carbonate of iron, mixed with various proportions of alumine and silica. The important art of smelting iron is entirely a chemical operation, and depends mainly upon the fact that, at a high temperature, carbon has a stronger affinity for oxygen than iron has; and hence when the native oxide of iron is heated with coal or charcoal, it is decomposed, and carbonic acid gas and metallic iron are the results of the process. When the ores are smelted which consist principally of oxide of iron, they are at once heated with carbon; but when the clay iron-stones are used—and they are the ores most commonly employed—they are first submitted to a preparatory process something like the burning of lime, in order to expel the carbonic acid gas which they contain; and when thus converted into oxide of iron, they are mixed with carbon and lime, the use of the latter being to combine with the silica or silicic acid and alumine, and form with them a fusible compound called a slag; which greatly assists in the melting and running together of the newly-reduced iron.

Iron is able to form two distinct compounds with oxygen, according to the quantity of that gas, with which it combines; thus, when combined with two-sevenths of its weight of oxygen, it constitutes a black substance which is called the protoxide, and when combined with three-sevenths, forms a brownish-red substance called the peroxide. These oxides are both bases, and each forms a distinct series of salts by combining with acids; but the salts formed by the protoxide have always a tendency to absorb oxygen from the air, and thus become converted into the salts of the peroxide. The colour of a great many stones and soils is principally caused by the presence of a small quantity of either the peroxide, or of a mixture of both of the oxides of iron. The rusting of iron, which proceeds so rapidly when iron is exposed to damp air, is caused by the attraction which the metal has for oxygen. It is very remarkable that iron is unable to combine with the free oxygen always in the air, but is able to take it from its compound with hydrogen; for we find that in dry air, iron remains clean and bright for a long time, but very rapidly rusts when exposed to the joint action of air and water, or kept in damp air, under which circumstances water is decomposed and oxide of iron formed. The rust of iron is not a pure oxide but commonly a mixture of both oxides with a portion of carbonate, or compound of the protoxide with carbonic acid. Although iron cannot combine with the free oxygen of the air at ordinary temperatures, yet when strongly heated, it rapidly absorbs oxygen, and thus becomes converted into a black scaly oxide; whenever a piece of iron is heated in the fire, a quantity of a brittle black oxide is formed on its surface, which easily rubs off the iron—and hence this metal is gradually worn away by exposure to fire; it is from this reason that the iron pokers, fire-bars, and other things much exposed to the fire, gradually get thinner and thinner from the constant oxidation of the surface whilst hot, and removal by friction of the brittle coat of protoxide thus formed. When a piece of iron is very strongly heated, it at last begins to burn, that is to say, the combination of the external part with oxygen goes on so rapidly, and evolves so much heat, that the whole mass of iron is kept sufficiently hot to continue this process of combination, and in consequence the iron glows brightly, gives off abundance of sparks, and runs down in drops of the melted oxide for some time after it has been removed from the fire in which it was heated. In fact, iron when thus strongly heated would catch fire and continue to burn like charcoal, if it were not that the crust of oxide formed protects the metal from further oxidation, and soon stops the combustion. One of the most common and abundant of the ores of iron is called pyrites, which is a compound of iron and sulphur; it is not used in the manufacture of iron, because it is very difficult to separate the sulphur completely from the iron, and the native oxides and carbonate are far more convenient sources of the metal. Pyrites, or sulphuret of iron, is however a substance of considerable importance in the arts, being one of the sources of sulphur, which is obtained by heating pyrites in an oven so constructed that the sulphur which is expelled in the state of vapour from the pyrites is cooled and condensed into the solid form in a different part of the oven. Pyrites when exposed to the air soon crumbles down, and undergoes a very curious change, in consequence of absorbing and combining with oxygen. Both the iron and the sulphur combine with oxygen, and form oxide of iron and sulphuric acid; and hence the result of this action is sulphate of iron, or common green vitriol, a salt much used in the arts for a variety of purposes. Pyrites is most abundantly found in the form of variously shaped balls, imbedded in chalk; and as the chalk-hills on the sea-side gradually wear away from the action of the sea and weather, these balls of pyrites get exposed to the air, and fall down on the beach, whence they are collected for the use of manufacturers. Many springs of water contain a small quantity of iron, in consequence of which they have a peculiar inky taste; this is usually derived from the gradual oxidation of sulphuret of iron—and from the same reason soils also sometimes contain traces of this salt.

Sulphuret of iron is likewise very commonly found in coal, being sometimes dispersed throughout it in the form of little yellow shining particles, and sometimes as layers or lumps of the solid sulphuret; its presence in coal is for some purposes highly objectionable, because whether the coal is burnt in its crude state, or after being converted into coke, a quantity of sulphurous acid gas is always formed by the imperfect combustion of the sulphur; and that nauseous-smelling gas causes serious mischief in several operations in the arts, and consequently in such cases coal free from sulphuret of iron can only be employed. It is the presence of this substance in coal that causes the strong suffocating smell of sulphurous acid sometimes given out by coal and coke fires.

The oxides of iron are quite insoluble in water, but many of the salts of iron, like the sulphate, are readily soluble in it; the solutions of these salts are all decomposed when a little alkali is added to them—this combines with the acid, and the oxide of iron is separated as an insoluble powder.

It is unnecessary further to describe the metallic oxides and salts at present, as the oxides and salts of iron are by far the most important in relation to plants; the other oxides, though very important in the arts, are scarcely ever found in the soil, or in any vegetable substances. What has been said of iron is, however, generally speaking, applicable to the other metals; they all have a more or less powerful affinity for oxygen, and under proper circumstances combine with it: some have so strong an affinity for it that they are able to decompose water, and hence rust when exposed to the weather; others again are unable to combine with it at common temperatures, but oxidise rapidly when heated; and some have so weak an affinity for oxygen, that they are unable to combine with it unless under the most favourable circumstances, such as for example when boiled in strong nitric acid, which, from the large quantity of oxygen it contains, is a very powerful oxidising agent, and is therefore able rapidly to corrode most of the metals. Some of the metals only combine with oxygen in one proportion, whilst others combine in two or more relative proportions, and form different oxides. Thus, for example, when lead is melted over a fire and kept for a long time exposed to the air, it gradually combines with oxygen, and becomes converted into a yellow-coloured substance called litharge; this is an oxide of lead, and if it be kept heated, it absorbs an additional quantity of oxygen, and passes into a brilliant red substance called minium or red lead; this is a second oxide, and contains more oxygen than litharge does. Besides these two oxides, there is yet a third, which cannot be formed by merely heating red lead and exposing it to the air, but which is easily made by boiling red lead in nitric acid; it then acquires a third dose of oxygen, and becomes dark brown. These oxides are not all bases; they are not all able to combine with acids and form salts, but usually only one, or sometimes two, of the oxides of a metal are bases: thus, only one of the three oxides of lead, that containing least oxygen, is a base, and when combined with carbonic acid, forms white lead—a substance of very great importance, as being better suited than any other we are acquainted with for the manufacture of paint. The other two oxides of lead are unable to combine with acids, and therefore, when acted on by strong acids, they part with some of the oxygen they contain, and are then able to combine with the acid, being converted into the protoxide, which is a base.

We have now very briefly gone through most of the principal substances which are of importance in studying vegetable chemistry; but before entering on the action which these substances have on the growth of plants, we must examine the nature of those vegetable substances which constitute the growing parts of plants.

We cannot here describe the different modifications of cellular and fibrous matter which form the mass of plants; and indeed this is not desirable, as we have only to do with the chemical differences between these various substances, and not with their mechanical structure and functions. When we examine a plant chemically, we find that a large part of its weight consists of water, which is essential to its life and growth. When this water has been expelled by drying the plant, we find that the remainder consists of a number of different substances, almost all of which are composed of the four elements, oxygen, hydrogen, carbon, and nitrogen, or some of them, combined together in various proportions. The most solid of these substances, that which gives wood its strength, and which exists in greater or less quantity in all plants, is called lignin, or woody fibre. It is a compound of oxygen, hydrogen, and carbon, rather more than half its weight being solid carbon. Woody fibre, or lignin, is a white fibrous substance composed of an infinite number of very fine threads or fibres, perfectly insoluble in water, and not in any way acted on by dry air. When heated it soon turns brown, owing to a partial decomposition; for though whilst the carbon is united with oxygen and hydrogen its usual black colour is lost, yet as soon as the elements begin to separate and the carbon is set at liberty, it always appears in its black and coaly form: if lignin be further heated, it catches fire and burns with a tolerably bright flame, producing as the results of its combustion water and carbonic acid; and it is remarkable that the hydrogen and oxygen in lignin exist exactly in the right proportions to form water if they were to combine together, and the carbon were removed. When woody fibre is exposed to the joint action of air and water, it undergoes, as has been before stated, a change somewhat similar to combustion; at least in both cases carbonic acid and water are formed.

The most important of the remaining substances which are common to the greater number of plants, and which form in addition to woody fibre the bulk of vegetables, are called gluten, albumen, starch, gum, and sugar; but in addition to these, all plants contain small quantities of peculiar substances, such as oils, resins, colouring matters, traces of various saline and earthy ingredients, &c. Gluten is a constituent of many seeds, such as the seeds of wheat, barley, rye, &c., and is therefore a component part of bread, and many other articles of food. Gluten is insoluble in cold water, but when moist is remarkable for its elasticity and adhesiveness; giving to common wheat-flour paste the properties which render it so useful for a variety of purposes. Gluten consists of oxygen, hydrogen, carbon, and nitrogen; and hence during its combustion or decay, ammonia, and sometimes in the latter case nitric acid, is produced. Like all other substances containing nitrogen, gluten is very liable to decompose, and give rise to the formation of new compounds. This can, however, only take place when water is present, which is absolutely necessary to such changes; and therefore gluten may be kept unaltered for a long time, provided it be kept dry. When seeds are moistened, they undergo a change, and the gluten is decomposed; and, in consequence, they either germinate or rot. Albumen is very commonly associated with gluten, and is similar to it in composition, being composed of the same four elements; it is, however, possessed of peculiar properties which distinguish it from that substance, and has not the adhesive and elastic qualities of gluten; whilst decaying, however, it undergoes similar changes, and evolves the same substances. There are many modifications of gluten and albumen, in consequence of which they have received a number of different names to distinguish them, according to the plants from which they are obtained. Starch is contained in almost all plants. It is white, insoluble in cold, but readily soluble in hot water, and consists of oxygen, hydrogen, and carbon—rather less than one-half of its weight being oxygen. Associated with albumen and gluten, it constitutes the greater part of the flour of wheat, and it also exists in very large quantity in the tubers of the potato. When a solution of starch is kept for some time, it is partially changed, and a portion of the starch is converted into sugar; and when starch is strongly heated, it is also greatly altered, being converted into a substance having most of the properties of gum. Under the name of gum are included several substances which considerably differ in their properties. They all agree in being tasteless, or nearly so; but some, like gum-arabic, are soluble in water, forming a clear transparent solution; whilst others, like the cherry-tree gum, are insoluble, swelling up and forming a gelatinous mass. Gum consists of the same elements as starch, but contains rather more oxygen. Sugar, though less abundant than either starch or gum, is found in a number of vegetables, and exists in some in large quantity. It is easily soluble in cold water, and readily known by its sweet taste; its properties differ considerably according to the plant from which it is obtained. Sugars are divided into two classes—those which are crystallizable, and those which are uncrystallizable: that is to say, those which, when their solution in water is evaporated, are obtained in the form of regular-shaped little grains, like common cane-sugar, and those which cannot be thus obtained, but always remain viscid like treacle. Sugar consists of oxygen, hydrogen, and carbon, united in proportions somewhat similar to gum and starch, but varying slightly according to the plant from which it is obtained.—*Gardeners' Chronicle.*

ON PLANTING.

TO THE EDITOR OF THE NORFOLK CHRONICLE.

Sir,—Some years ago you obliged me by inserting in your paper an account of the produce of a piece of land measuring eight acres, planted with acorns in the year 1729. I have brought the account now down to the present time, and beg you to give it again a place in your columns whenever it may be convenient. The piece of land was cold, and from the practice of under-draining not having been then introduced, very unprofitable; at Michaelmas, 1729, it was sown with wheat, and acorns dibbled in; when reaped, the stubble was left very long, which is supposed to have caused the plants to run up very straight.

	£.	s.
From 1729 to 1763 plants were drawn and sold to the amount of	100	0
In the year 1764 by 1500 poles sold....	50	0
1765 by 1374 poles........	50	0
1767 by 468 poles........	30	0
1770 by 501 poles........	39	18
1771 by 440 poles........	21	0
1777 by 280 poles........	21	0
1781 by 150 poles........	80	0
1793 by 101 poles........	21	0
1794 by 150 poles........	103	0
1797 by 30 trees now measuring timber	20	0
1799 by 100 trees........	60	0
From 1800 to 1810 by 307 trees........	389	12
From 1810 to 1821 by 94 trees........	219	0
From 1821 to 1833 by 36 trees........	108	0
From 1833 to 1841 by 51 trees measuring 37 loads ..	237	17
	£1550	7
The underwood never came to perfection, but was stubbed up in the year 1767, and the feed let for 30 years for 10s. per acre	120	0
Value of the feed at the same rate from that time to the present, being 44 years	176	0
Present value of trees now standing, being 280	1400	0
	£3246	7

The expences of felling, &c., cannot now be exactly ascertained, but the value of the topwood is not included in the above account, nor a great many poles and trees used upon the premises from the year 1763 to the present time, which at a moderate estimate must have far exceeded the expence of labour.

I am, Mr. Editor, your obedient servant,
Thos. Howes.
Morningthorpe, August 31, 1841.

A LECTURE,

READ AT THE GREAT TORRINGTON FARMERS' CLUB, BY MR. RISDON, OF SPECCOTT.

Upon the present occasion I have to apologize for not being better prepared, but the cause of my not being so is, that I fully expected a gentleman whom I requested to give his ideas on the peculiar qualities of the North Devon breed of cattle, would have obliged us to-day. However, I trust on some future occasion I shall be able to get some celebrated breeder of the true North Devons to do so. I shall therefore make a few remarks as a continuation on my last respecting the "State of Agriculture in the north of Devon." I before remarked that agriculture must vary considerably in different districts, from the variation of soil and climate. The north of Barnstaple, and the entire north of this county, has a great tendency to produce grass, which, I believe, is the cause of the very superior cattle there produced, and which may fairly be considered as indigenous to that soil; and that the herbage or food, together with the climate, is the true cause of the breed there found; and I also believe that the cattle there produced will degenerate, or lose their peculiar qualities, when removed from their native soil. However, you will, I trust, be further informed on this by some gentleman whose experience and abilities will enable him to go further in detail on this important subject; and this, I hope, will not be deferred to any very distant day. You are all aware that corn is but little produced in the particular district now under notice, which is the entire north and north-east of Devon, but the cattle so justly celebrated are there found in all their genuine purity, and tens of thousands of the horned sheep, commonly called the Exmoor sheep, are there found grazing in the summer months on the highest hills, the wethers of a year old being often suffered to remain on those hills for the whole year—that is, they are not removed during the winter, but suffer the severest weather without being at all affected by disease of any kind, and in the coming spring recover their lost condition upon the same pasturage; and in the autumn thousands are driven off to more favoured districts, and fattened for the London and other markets, producing mutton of the best flavour, varying from ten to fifteen pounds per quarter. Those whose business has never called them to visit such a district as this, on their first doing so cannot but fancy themselves removed into a different county. Although a great many farmers even of this neighbourhood know nothing of the state of things in this peculiar district, still this uncultivated land is in most instances very superior in quality to much of the land in North Devon, which is situated in corn districts, and without the aid of labour would not keep cattle, much less grow corn; yet in those situations where the soil is inferior, sheep of the finer breeds are produced, but they require the care of man to provide for them during winter, and also much attention in all seasons of the year. It may then be asked by a person unacquainted with the variations of those districts, what prevents the cultivation of the north of Devon, when the soil is said to be superior to many districts that are cultivated; and particularly as the subsoil of many of the districts that are cultivated is of the worst description—that is, yellow clay; whereas in the north of Devon clay is rarely to be found? My answer to this is: climate prevents cultivation, as it is well known corn does not ripen as it should, although very large quantities of straw are produced by tillage, and a gracious Providence has so ordered that the land shall produce grass of good quality, and placed cattle upon it suited to that climate and soil; and man is bound to improve by all the means in his power the advantages he possesses, not for selfish motives only, but for his own benefit and the benefit of his fellow-man. In my last I stated how the altitude of the hills in Devon were elevated from the level of the sea, and we find the Exe, which falls into the English Channel at Exmouth, rises in Exmoor, very near the Bristol Channel, and not far from the district now under my consideration; and much of this country is directly exposed to the west and north-west, and frequently overlooks the Atlantic on that part of it called the Bristol Channel, at the entrance at the bar at Barnstaple and Bideford Bay.

This neighbourhood, as a matter of course, for the want of cultivation, cannot possibly keep in winter what it will graze in summer; and here we have a great advantage in being able to produce the fine cattle which we exhibited at this place at the great markets in March and the fairs in October. Much of the cattle here produced have been to the north of Barnstaple for the summer, and they return in much better condition than they would have been had they been kept at home; indeed, the same quantity could not under any circumstances have been reared, if this advantage had not presented itself; for other districts produce arable lands which are not adapted for permanent grass, and would be unproductive if its dormant qualities were not brought into action by the plough. With this advantage more cattle are reared and more corn produced; as without the aid of this pasturage the cattle could not be kept the summer, and withou the tillage it could not be kept the winter; and it must be borne in mind that we have a winter to every summer, and unless we can provide food for the winter, cattle cannot be had to graze on the grass produced in summer; for the cattle that could be kept would be very limited, and by no means equal to the demand if it was not for cultivation, as much of the land now cultivated is not fit for grass, and would therefore be wholly unproductive.

In my last I stated that I have lately seen the corn drill frequently in use in this county, and I see the subsoil plough made use of in some places. It strikes me much good may be done in heavy clay soils by the use of this plough. I have seen an estate where the occupier has made use of it for years, and although his land is of a very inferior description, yet I never saw an estate in better condition; and although he is a renting farmer, I think I may fairly say, under all circumstances, I never saw one in so good order. I was also told much of the land had been subsoiled for years, but the subsoil plough now in general use was not made use of; but the common iron plough, without the furrow plate, followed after one of the ordinary kind, so that the ploughshare moved the soil, and it again remained as before; and I never saw poor land in so good condition.

I see many farms well cultivated by the best practical farmers, and men of good sound practical information; and I am of opinion that many of those would be happy to attend a meeting of this sort, to get experience from others, and impart what they themselves know, but some of whom, from habits and education, would feel diffident, and others incapable of putting their ideas into writing. I am also of opinion the very best results must arise from opportunities which clubs of this sort must give in advancing the cause of agriculture; and my anxious wish is that we may seek for information in this way, and rest assured that that man bears the burdens of life the easiest who improves his talent to the utmost, and is ever ready to inform others of the way he believes to be the cause of his own prosperity, and warn others from doing that which experience has taught him is not likely to answer.

Individual prosperity cannot be practised in our enlightened age; and he that does the greatest good for himself, and at the same time points out to others the means he has pursued in doing so, deserves the highest commendation, and is sure to derive the consolations he deserves in doing all he can for the general weal.

DIASTASE.

FROM JOHNSTON'S LECTURES ON AGRICULTURAL CHEMISTRY AND GEOLOGY.

Diastase.—When cold water is poured upon barley newly malted and crushed, is permitted to remain over it for a quarter of an hour, is then poured off, filtered, evaporated to a small bulk over boiling water, again filtered if necessary, and then mixed with much alcohol, a white tasteless powder falls—to which the name of *diastase* has been given.

If unmalted barley be so treated no diastase is obtained. This substance, therefore, *is formed during the process of malting.*

If wheat, or barley, or potatoes, which by steeping in water yield no diastase, be made to germinate (or sprout), and be afterwards bruised and treated as above, diastase will be obtained. *It is therefore produced during germination.*

If the shoot of a potatoe be cut off within half an inch of its base, this lower portion with the part of the potatoe to which it is immediately attached, separated from the rest—and the three parts (the upper portion of the shoot, the lower portion with its attached fragment of potatoe and the remaining mass of the potatoe) treated with water,—only that portion will yield diastase in which the base of the shoot is situated. When a seed sprouts, therefore, *this substance is formed at the base of the germ*, and there remains during its growth.

If the same portion of the potatoe, or if the grain of barley or wheat is examined, when the first true leaves of the plant have been fully formed and expanded, the diastase will be found to have in great part if not entirely disappeared. This substance, therefore, is first formed when the seed begins to sprout, performs a function which makes its presence necessary at the base of the germ, and which function being discharged when the true leaves are formed, it then disappears. What is the nature of this temporary function, why the diastase must reside at the base of the sprout in order to discharge it, and why it should so early cease, will appear from a detail of the properties of this singular substance.

Properties of diastase.—If the solution obtained from malt be digested with potatoe, flour, or other starch at a temperature between 120° and 140° F., the latter will gradually dissolve and will form a colourless and transparent solution. When this solution is carefully evaporated, a yellowish white powder is obtained, perfectly soluble in water, to which the name of *dextrine*[*] has been given. This dextrine has the same composition as starch. It is merely starch changed or transformed in such a way as to become soluble in cold water—a change analagous to that which it undergoes by simply boiling in water.

But if the digestion be continued after the starch is dissolved, the solution will gradually acquire a sweet taste, and if it be now evaporated it will yield, instead of dextrine, a mixture of gum and grape sugar. And if the digestion be still further prolonged, the whole of the starch will be converted into grape sugar only.

Thus diastase (like sulphuric acid) possesses the property of transforming starch entirely—first into gum, and then into grape sugar. The intermediate stage of dextrine has not been recognised in the action of sulphuric acid, nor is it easy to arrest the action of diastase exactly at this point—the most carefully prepared dextrine always containing a mixture of gum and sugar. One part of diastase will convert into sugar 2000 parts of starch.

A solution of diastase, when allowed to stand, soon undergoes decomposition, and after being boiled, it has no further effect upon starch. It has not been analysed, because it is difficult to obtain it in a pure state. It contains nitrogen, however; for, when moistened and exposed to the air, it decomposes, and among other products yields ammonia.[†]

The functions of diastase—one of the purposes at least for which it is produced in the living seed, and situated at the base of the germ—will now be in some measure understood. The starch in the seed is the food of the future germ, prepared and ready to minister to its wants whenever heat and moisture concur in awakening it to life. But starch is itself insoluble in water, and could not, therefore, accompany the fluid sap when it begins to move and circulate. For this reason diastase is formed at the point where the germ first issues from the mass of food. There it transforms the starch, and renders it soluble, so that the young vessels can take it up and convey it to the point of growth. When the starch is exhausted its functions cease. It is then itself transformed, and carried into the general circulation. Or when, as in the potatoe, much more starch is present than is in many cases requisite, its functions cease long before the whole of the starch disappears. Its presence is necessary only until the leaves and roots are fully formed—when the plant is enabled to provide for itself, and becomes independent of the starch of the seed. When this period arrives, therefore, the production of diastase is no longer perceived.

This I have said is one of the purposes which appears to be served by diastase in the vegetable economy. That it is the only one we have no reason to believe. There may be others quite as interesting which we do not as yet understand. This is rendered more probable by the fact that the diastase contained in one pound of malted barley is capable of converting into sugar five pounds of starch.[*] (Liebig.) And though at the temperature at which the seed germinates, more of this substance may be necessary to transform the same weight of starch than is required in our hands, when aided by artificial heat,—yet as we never in the ordinary course of nature find anything superfluous or going to waste, there is reason to believe that the diastase may be intended also to contribute directly to the nourishment and growth of the plant. As it contains nitrogen, it must be derived from the gluten or vegetable albumen of the seed; and as a young plant of wheat, when already many inches from the ground, contains no more nitrogen than was originally present in the seed itself (Boussingault), this diastase may only be the result of one of those transformations of which gluten[†] is susceptible, and by which it is rendered soluble and capable of aiding in the production of those parts of the substance of the growing plant into which nitrogen enters as a necessary constituent.

It may not be uninstructive if we pause here for a moment, and consider the beauty of the arrangements we have just been describing. In passing through a new and interesting country we do not hesitate at times to stop and gaze, and leisurely admire. We cannot otherwise fully realise and appreciate its beauty. So in the domains of science, we cannot be ever hurrying on—we must linger occasionally, not only that we may more carefully observe, but that we may meditate and feel.

You see how bountifully nature has provided in the seed for the nourishment of the young plant, how carefully the food is stored up for it, and in how imperishable a form—how safely covered also and protected from causes of decay! For hundreds of years the principle of life will lie dormant, and for as many the food will remain sound and undiminished till the time of awakening comes. Though buried deep in the earth, the seed defies the exertions of cold or rain, for the food it contains is unaffected by cold, and absolutely insoluble in water. But no sooner is the sleeping germ recalled to life, by the access of air and warmth and duly tempered moisture, than a new agent is summoned to its aid, and the food is so changed as to be rendered capable of ministering to its early wants. The first movement of the nascent germ (and how it moves, by what inherent or imparted force—who shall discover to us?) is the signal for the appearance of this agent, diastase; of which, previous to germination, no trace could be discovered in the seed. At the root of the germ, where the vessels terminate in the farinaceous matter, exactly where it is wanted, this substance is to be found; there, and there only, resolving and transforming the otherwise unavailable store of food, and preparing it for being conveyed either to the ascending sprout or to the descending root. And when the necessity for its presence ceases—when the green leaf becomes developed, and the root has fairly entered the soil—when the plant is fitted to seek food for itself—then this diastase disappears; it undergoes itself a new conversion, and is prepared in another form to contribute to the further increase of the plant.

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[*] Because its solution turns to the right a ray of polarized light when passed through it.

[†] It will be recollected that ammonia contains nitrogen, being represented by N H.—See Lecture III., p. 69.

[*] It is the diastase in malt which dissolves the starch of the barley in the process of brewing, but as the diastase contained in malt is sufficient to dissolve so large a quantity of starch, it is obviously a waste of labour to malt the whole of the barley employed. One of malt to three of barley would probably be sufficient in most cases to obtain a wort containing the whole of the starch in solution. Advantage is taken of this property in the manufacture of the *white beer* of Louvain, and of other places in Flanders, and in Germany, where the light colour is secured by adding a large quantity of flour to a decoction of a small quantity of barley.

[†] That *diastase* is merely *transformed* gluten we cannot say, because the exact chemical constitution of diastase is as yet unknown.

How beautiful and provident are all these arrangements!—how plastic the various forms of organic matter in the hands of the All-Intelligent!—how nicely adjusted in time and place its diversified changes! What an apparently lavish expenditure of forethought and kind provision, in behalf even of the meanest plant that grows!

ON PEAT.

Peat or moss is one of the most recent deposits of the alluvial formation, of the origin of which various opinions are entertained. Six kinds have been enumerated. Some reckon it a primitive formation, and of antediluvian origin; others think it a growing vegetable, which by its decay causes the increase of the substance, and may ultimately cover the earth; and the more general opinion ascribes it to the collection and decomposition of ligneous and aquatic vegetables brought together by the destruction of forests by wars, by the axe, and by tempests, and accumulated by the decay of those bodies, and of the plants, encouraged by their decomposition. Formations of peat chiefly abound in moderately cold latitudes; they cover vast tracts of country in Scotland and in Ireland, and are found in the different states of solid peat, cut and dried for fuel, and of a black or brown colour, extending to depths of four to twenty feet; in boggy or flow moss, which is supplied with too much water, and prevents the consolidation; and in many varieties of peat earths of shallow depths, forming soils of that name, sometimes cultivated, and oftener unimproved—sometimes clad with a scanty covering of heaths and coarse vegetation, and often naked and uncovered with any growing plant. The theory of the formation of peat by the decomposition of the collection in hollow places of trees and leaves, of vegetation, by the action of air and water, and of the subsequent growth, has been generally received as the most plausible; but we find mosses of great extent on the tops of mountains, and on high grounds, and even on declivities, where no water can stand, and where no collections could be formed. Trees of great size have been found in mosses, and also shrubs of various kinds, and the leaves and fruits are not unfrequently met with in different stages of decay. The mosses that are cropped as land are not adapted for fuel, the composition is too friable and earthy, and the circumstance of the top of many mosses being of a different colour, and spongy and fibrous, favours the opinion that the decomposition of the vegetable covering adds to the bulk of the moss, as it appears to be in a more recent state of decay than the bottom parts, which have become a black, pulpy substance, from which all traces of fibrous organization have completely disappeared. Formations of peat are found in vast beds from four to twelve feet deep on level grounds, and on declivities where no water stagnates, and where trees and vegetable matters sufficient to form the moss can hardly be supposed to have grown, and where no remains are ever found. Mosses generally rest on clays and marls, and very often on gravels and clayey gravels with white sand; and theorists are driven to the supposition that there exists a predisposing cause towards the formation of that substance in the woods on which the moss commenced growing, and in the climate, and in the subjacent formation, and also in the production of the plants that are adapted by the decay of their constituent parts to afford the peaty substances. But all the reasons yet given, the conjectures, theories, and suppositions, are unable to account for the great variety of the formations of moss, a solid mass, black and pulpy from top to bottom, is often found adjoining a formation of spongy fibrous materials, alike at the top and on the substratum of clay, and both existing under no apparent difference of circumstances; the former bare and uncovered, and incapable of supporting weight; the latter matted over with a thick growth of vegetables, supporting heavy weights, and affording a pasturage to animals. The varieties are numerous; some afford fuel wholly, others are cultivated, while many are unfit for either purpose, and descend by many gradations to a shallow stratum of a few inches in depth, and are called turfy, moorish, and peaty soils. The antiseptic quality of peat is well known, and preserves substances from decay; unlike fens and marshes, the air is healthy and salubrious, which shows that the moss is not in a state of putrifaction. Moss grows and enlarges upwards after being dug and carried away, supposed by the plants dissolving by the maceration and decay of their parts, and not by any process analagous to putrifaction, for they remain without undergoing the usual chemical change. The sterility of moss is ascribed to the want of the putrid fermentation, for it is inflammable and phosphorescent, qualities wholly removed from bodies that have undergone the process of ultimate decay. Moss and vegetable mould are reckoned homogeneous substances, altered by the different circumstances in which they are placed, and the external agencies to which they are exposed; but this fact, when granted, gives no reason for moss and mould being produced in adjoining situations, where little or no difference in external circumstances would be supposed to exist. No living animals exist in moss; to form it, dampness and astringency are required, and the water must be antiseptic, which is said or thought to derive that quality from the subsoil. But we are equally in the dark whether the astringent and antiseptic quality be derived from the subsoil, the climate, or from the plants that grow on the place of formation, or from the combined influence of all these causes joined together; the scientific reasonings of theorists are generally overturned by facts, and by the appearances of nature; and after all the opinions and conjectures that have been put forth, the more reasonable and natural conclusion would seem to be, that moss is an original formation, augmented, like other formations of a similar nature, by physical agencies still going on, and that it has been produced and located by causes, for a solution of which our wandering imaginations may ever search in vain. J. D.

ON HILL SHELTER.

BY MR. D. BAIN, EDINBURGH.

(From the Quarterly Journal of Agriculture.)

In the three preceding papers, though I have occasionally shown the effects of shelter upon high grounds, as well as upon low, I have written more especially with a view to recommending shelter on the plains.

I must now turn more especially to the hills; and considering the great extent of these in Scotland, the immense value of the animals at present subsisted upon them, and that might by proper management be made to be subsisted upon them, the facilities for transport that are now afforded from every point by steam for either the animals or their wool, and above all, the growing wants of a rapidly increasing population, that give value to every increase in the means of subsistence, it is difficult to say which is the most important part of this subject, namely, the shelter of the valleys or of the hills.

The idea of sheltering hills, indeed, may appear at first chimerical, but I think it is rather the circumstance of having neglected them so long that is discreditable. There is certainly no reason for sheltering, cultivating, and otherwise increasing the productive powers of the plains, that does not apply equally to the hills, so far as management can be made available; nor can a reason be adduced in justification of having so long left the hills to nature, while every effort has been made to reclaim and fructify the plains. No doubt the idea of reclaiming, or in any degree improving the hills, is an overwhelming one, taken as a whole; but "what cannot man perform?" I am so sensible of the effect of a first consideration of the subject, that I may say it has slept with myself for twenty-seven years, distinctly from this cause. It was in 1814 that the idea of carrying shelter even into the highest hills first occurred to me; for then I travelled over great part of Scotland on foot, noting every circumstance that I thought might be made useful. Through many of the corn districts, especially the upland, and I may add, such as were adapted for cattle, I came to the conclusion that shelter was extensively wanted, and that impression was never shaken. I carried it far into the hills also. But, looking westward on the hills from Loch Lomond, under a beautiful afternoon's sun, that gave them the appearance of an immense sloping plain of blue and gold, they appeared to me *so interminable*, rising hill over hill for, as it seemed, hundreds of miles, till they mingled with, or rather seemed to support, the sky, that my mind sunk overpowered by the immensity of the speculation. Yet every one speaking of the breeding of sheep (and *they* are now, by general consent, considered the most suitable inhabitants of high hills), speaks of the desirableness of shelter; and the most moving tales have been told for centuries of the catastrophes to sheep and shepherds that often arise from the want of shelter, and of landmarks and inhabitants. But no one has thought of removing these terrible wants; of substituting warmth and plenty for cold and sterility; landmarks and inhabitants for trackless deserts. This has appeared to me wonderful, and at last unbearable; and this is the history of my long silence, and of my speaking now. Perhaps till now the time was not come. I hope it now is.

Considering, as I have already said, the value that now attaches to every product of hill or valley, I consider it quite possible that by means of shelter, even within fifty years, the region of corn might, in many places, be made to take the place of black cattle; the cattle be moved to the present region of the heavier sheep; the Cheviot sheep be made to thrive where at present the black-faced only can, and the black-faced be moved to the present region of the goats and eagles; and that, throughout the whole, the huts of the hardy Highlanders should rise, not thick and frequent, but oftener than they do at present, not only to the great benefit of their country, but with the appropation of even political economists. I shall proceed immediately to say how.

But I must say in the outset to the sheep-farmer and breeder, that I am aware of all their exertions, and that they are very great. But have they not begun at the wrong end? They no doubt, with great care and at much expense, create (as it were) a superior race of sheep; but let them abate their care, and where would all their improvements be? They would go for nothing. They create fine sheep as in a garden they may create fine flowers; but the moment they place the breed of the warm and rich plains of England on the bleak hills of Scotland, what follows? This clearly, that the unhappy creature, placed in a climate destined for another species of animal, immediately begins to degenerate into an animal suitable to the climate. The forcers of sheep, therefore, are, in their present conduct, what hot-house gardeners would be, were they, after raising their plants on a hot-bed, to plant them out on a hill; with this difference, that in the conduct of the gardeners there would be only folly, for, though the vegetable would perish, it would feel no pain, but the man who transplants the animal of a temperate climate to one that is intemperate, is guilty of both folly and cruelty, for while the animal is deteriorating or dying, it is also suffering pain.

Let the sheep-farmer and breeder provide a more congenial climate and more abundant food, and then he may hope that his improved breeds will prosper—and not till then. But with this precaution, even as to his own black-faces or Cheviots, he will find that, by merely selecting the best of his own or of a neighbouring stock, for the purpose of continuing the race, he will have an animal much more valuable, because more natural, than anything he can at present produce under any exertions; and every year, instead of deteriorating as at present, it would be improving by a natural process, that is, as the climate and pasture might improve. It is said by some, indeed, and I think truly, that under *such* treatment the black-faced sheep would become a Cheviot, the Cheviot a Dishley, &c., as a colewort, by proper food and shelter, becomes a cauliflower, or a crab an apple. It is, in all events, wonderful, that while a man never thinks of raising a cabbage without first raising a wall, or anything more delicate without providing a stove, farmers and sheep-breeders should go on attempting to raise Leicesters and Cheviots where it were more suitable to place goats, and wheat where naturally they should expect but thistles.

All good cultivation is only assisting nature, not forcing it; therefore it is quite clear, that if we can improve the quality of the food and climate for animals, that is the natural course to be followed; and doing this on the large scale is the only economy. What is farming but gardening on a large scale? Our fields should be as sedulously sheltered, according to their wants, as our gardens are. In like manner, breeding animals is but keeping a large menagerie; and has any keeper of a menagerie prospered or expected to prosper, but by furnishing his animals with the *climate* that is suitable to them, as well as the food? Never. By dint of reasoning and example, farming has within the last fifty or sixty years been raised into something like a science, though far behind what it ought to be, considering that it is one of the first of sciences; and I say, that providing a climate for corn is just as indispensable to its perfection, as providing it mould and manure, and therefore should be one of the elements of the science of agriculture. Equally necessary is climate to the perfection of animals; and though we may struggle on for a time without regarding this, or considering it hopeless, as our forefathers did to a much greater extent, in so far as we neglect it, we are not wiser than they; we take precautions a little less perfect, but this only from habit and accident, not from science and system.

But improve the climate of hills—of mountains rather! Yes. We have made first steps that show its perfect practicability,—"*Et c'est le premier pas qui coute*,"—it is the first step that is difficult; after that we have only to observe and persevere. In a thick wood we are as completely sheltered on a hill as in a valley; and the sun that falls on a sheltered plain in the highest hills is as pleasing and as powerful as in the valley. Even the fogs that constantly hang upon a cold and unsheltered hill would not hang upon the same hill if made warm and sheltered, for there would be no power of refrigerating, and consequently arresting, the ascending vapours; they would move a stage higher. I move, therefore, that *hill culture* should henceforth have a place in our language; that hills may henceforth be received into the pale of civilization, and be considered as suitable subjects of improvement and cultivation, as the space they occupy amongst us renders it desirable they should be.

And to render a hill really valuable, I think it should never be planted with trees, unless it can in no other way be turned to use. Wood is always beautiful, and to a certain extent it is valuable; but I think it should become an axiom, that in this country wood should never willingly be made a *crop*, but *the nurse of crops*. I would have no more wood in the plains than would shelter the crops, and no more wood on the hills than would shelter the pastures and cattle. But this I would have.

And how are these shelters to be devised? Exactly as in the plains. And, strange as it may at first seem, I think it is demonstrable that hills may be more easily sheltered than even the plains: for the form of hills would exceedingly assist the artificial means of shelter, by giving them prominence, and consequently power.

Let us take a regular hill, for example,—a blunt cone. Any line of shelter running down the eastern face of this cone in a direction slanting to the north-east, will shelter an *immense space* from any winds blowing from the north, north-west, and west, the convexity of the hill adding amazingly to the power of the shelter, by adding to its relative height. Again, a line in like manner running down the western face, in a direction slanting to the north-west, will shelter extensively from all winds blowing from the north, north-east, and east, and these are in general the most piercing winds. On the sea-coasts of Galloway, the south-west winds are the most piercing, and in other quarters other winds may be severe. In those cases the policy must be a little modified; but in general, the two first lines I have indicated will shelter, and alone shelter, from every wind considered most destructive, except that blowing directly from the north. Of course, the shelters should be of wood, if possible, and rising within walls, particularly on the northern side. They should always have passages, at convenient intervals, to allow the flocks to pass from the one side to the other; and these passages should not be straight, so as to form *gaps* for the wind to pass through, but slanting or overlapping; and if the width of the belts were considerable, these passages would of themselves occasionally afford very valuable shelter.

The portion of the hill facing directly to the north must be treated differently. At the foot there might be a circular belt, especially taking advantage of any occasional eminences. Farther up, any hump might be taken advantage of, and planted with a slight belt; for in this way the natural height always assists the artificial. But if the face is a gradual slope, I should say that lines in the form of an open V, or obtuse angle pointing downwards, like the bars on the sleeve of a serjeant, would appear to afford the greatest amount of shelter at the least expense; for on considering, it will be observed that such lines would shelter *in every direction*.

Of course, in regard to hills of a different form, different plans must be adopted; the great object being always to shelter as much as possible of the ground exposed to the most scourging winds, at the least possible expense.

Professor Low recommends stells, or circular walls, but I should consider these no better than pounds; and should the sheep instinctively seek them and find the opening (neither of which is, I think, to be calculated upon), or should they be found and driven to them, though they might escape being destroyed by cold, they would run great risk from being blown over, or of perishing from hunger in a continuous storm.

An alternating recommendation is, clumps of four or five acres; but I should consider these as a useless waste of ground. If, indeed, the clumps were hollow, that is, having pasture in the interior, they might be very useful. Such places might be made to take the place of sheep-houses, by being made the depositories of preserved food—hay or straw; or they might have sheep-houses within them. But I conceive the coverts should in *all* cases be as natural as possible, so that the sheep might themselves find them. They should also be easily *left*, as well as found, in case of the attack of any hostile animals; and they should not too readily form deposits for snow, as circular clumps open in the interior would. The simple lines I have proposed would unite all advantages, and avoid all dangers: they would be easily found and easily left, and on one side or other always afford shelter and food.

They would also far exceed in safety the natural shelter of a crag or hillock; for, as I have already explained, a mere crag or a gentle swell gives no adequate shelter against wind or snow. They have not surface to break the force of the blast, and the snow, instead of being carried *from them*, is sure to lodge to their height immediately behind, thus *burying*, instead of preserving, either men or animals seeking shelter from them. But a wall with a proper coping, followed by trees, forces the gale, and whatever it carries, *high into the air*, and behind *them* there is consequently neither wind nor snow; there is a regular clear and calm.

By the plan I have ventured to suggest, therefore, of simple open lines, while the flocks would be protected, they would also have pasture; and were the edges of the belts planted with whins, broom, or any other shrubs or plants agreeable to sheep (and this they should be), they might during a storm be improving instead of starving, and this without the aid of any carried food.

But it may be held that the comfort, and even occasional preservation, of such stocks as the ground will at present carry, would be too dearly purchased by such arrangements as I propose; and so perhaps they would. But I have from the beginning contemplated that *the pastures would be improved* far beyond anything I would think it right to venture to state in figures. Mr. Bates has stated the value of shelter on Shotley-fell at 500 per cent.; that is, the sheltered land pastures *six times* the stock that it could sustain before being sheltered; and Mr. Bates is not a theorist, but a recorder of facts.

But that was on improved land. True: but still the ratio holds good, for the report speaks only of the land *after* improvement; what it would have borne before was probably not worth mentioning. But supposing this instance not fit to be insisted upon as a general thing, I think the following will be *allowed*:—

First, By these general lines the comfort of the flocks would be exceedingly increased, and the care of them rendered much easier, and still their power of ranging in no way restrained.

Next, Not only would the climate be improved to the animals, but also to the pastures. The pastures would consequently not only be rendered much earlier (a matter of great importance to the flocks), but much finer and more abundant. They would be completely altered in character, and the stock with them. In the improved climate the natural herbage of every description would not only be increased in amount, but improved in quality; for it could be brought to perfection. Finer grasses of every description would rise, finer heaths, and other bitter or aromatic herbs. Even whins and broom, when present, would be softened and improved, for in sheltered situations they grow long and silky, full of succulence and bitter; and these are not useless in such pastures, but in winter particularly are of the utmost value; for they are, from their nature, accessible when no other food is: they are not watery and subject to freeze, and must be well warmed in the mouth before being sent into the stomach; and they afford shelter at the same time that they give food.

But this is not all. A hill inclosed as I now propose would be so much improved in every way, that every spot would become valuable, and every capability be enhanced. I contemplate, also, that the shepherd on such a mountain should not thenceforth be a mere keeper of sheep; or, if so, that he should have assistants sufficiently qualified. In short, I spoke of *hill-culture*, and this is my idea of that.

Supposing the hills sheltered, then, as I have proposed, there is still the internal improvement of the surface. I will give some examples, merely to make sure that I am distinct.

There are many plashy hollows, and even quagmires, that, by merely being opened at a proper spot, would be effectually drained, and much surface at present useless or dangerous rendered highly productive. This should in every case be seen to, as I conceive.

Again: there are meadows that, being irrigated, might be made to produce natural hay, which, being mixed with many plants not to be found in artificial hay, would be of much more value to the sheep, and besides, it would be on the spot. It would be exceedingly important that this also should be seen to wherever it could be: and though in many places these may be carried to some perfection, in many more they are not so much as dreamt of, the ground in general being too valueless, from the total absence of shelter.

There are scalps often producing nothing, being continually oozing out or trickling down water, or scourged by the wind. A mere strip of sward being cut out on the top of these, would generally lay them dry, when they would soon become covered with grass; or if not, a few perennial seeds being thrown into them, or a few seeds of whins or broom, they would even, if nearly precipitous, be rendered safe, and add both to the extent and variety of the pastures.

Then the juniper is a valuable shrub for sheep, both from its qualities as food and a digestive, from its being strongly aromatic, and one of the best and most natural shelters for sheep and lambs. It can hardly be said to occupy *any space*, for the pasture is increased about its roots from the shelter it affords, and all its own produce is a farther clear addition. This shrub is supposed to grow only in tolerable land; but it may be seen in the poorest situations, if only dry and sheltered It may in some degree depend on the strata, but I think it might be propagated extensively with very little care.

The plant producing the crowberry is all edible; but it requires a mild climate, growing only in the shelter of the ranker and less valuable heaths. The shelter I propose would encourage it.

The wild thyme also, and many other plants invaluable to sheep, would inevitably spring up under a climate moderately softened.

Even the wild mint might be easily introduced in situations occasionally moist, or on the sheltered banks of runnels; and what so certain to add to the value of the flesh of the animals, as such pasture as these would give? Animals so pastured might, if fully fed, be sold at almost any price; nor should they ever, after being fattened on such pasture, be placed upon any other.

All the improvements I have as yet mentioned, excepting only the shelters, might be effected by the shepherds only, and render their time, at present in great part useless, in the last degree useful. But there are others not less essential, in which they must be assisted. The following are some of them:—

All over the hills there are occasional spots that might be made to produce either heavier natural crops, or, if it should seem necessary, artificial ones, in the last degree useful for sustaining a heavier stock in constant heart and comfort; and it is clear that advantage should be taken of these circumstances; the great object of all culture, and the only rational object of all cultivators, being to make each particular spot, by shelter or otherwise, produce the most it can; every addition to the products of the soil being a certain addition to the income of the state. Not that any crops should be produced in those regions *to be carried from them*, but only to be consumed there. But that is a great purpose. I would consequently propose, that wherever a considerable number of such spots might be found in contiguity, a small hill-shealing should be erected, for the express purpose of taking advantage of these capabilities: by enclosing them by stakes, for which there would soon be wood in abundance, or merely improving them for general use.

Again, in flat and cold spots (and there might be many such for long, in spite of any rational amount of shelter), the bruchar* grows extensively; a grass so hard and coarse that even sheep refuse it. By simply ploughing it down, a delicate grass would spring up, first in the shelter of the furrows, and next over the whole. A plough might be constructed with movable stilts or beam, that could be easily transported to any quarter on the sides of a small active horse; who would also be sufficient for thus scarifying the ground.

There are occasional flows of moss at present not only useless but dangerous, for in the summer they produce nothing, and in winter are regular sinks. Yet were these laid dry, as by a little management they might often easily be, and only a pannier load of lime thrown on an acre, the result would be, a flush of natural white clover,—natural and therefore perennial. A horse of very moderate value might assist in this. Were the ditches considerable, they might be dangerous to sheep; but care could be taken to have frequent slopes, to allow them to escape in case of falling in.

Where the pastures are thin or poor, peat, or any other such substance, saturated with the brine of outhouses, would prove an admirable dressing. These little mountain steadings, with their cow and horse, would be exceedingly useful for this.

Wood-ashes would also be valuable for this; and the thinnings of the woods which I propose, the shepherds' fires, &c., would furnish them.

Many of these mountain valleys are not poor. They are, on the contrary, rich, from the *diluvia* of the higher grounds, exactly as the lower valleys are; and they would now be equally sheltered. They are so remote and small, it would be useless to cultivate them on the usual principles, but to improve them as grass lands must surely seem allowable; and what shelter might not do, the means I have mentioned would.

In winter, during a storm, occasional baits of even whins and broom would be preferred by the flocks to the finest meadow-hay in its preserved state; and from their nature, they would be safer than any species of grass, either saturated with frozen water or with melted snow. Whins and broom, therefore, should perhaps be cultivated.

In spring at yeaning, or in summer at weaning, or for the weak and delicate generally, a little green crop of any description, clover, tares, vetches, or barley, added to the other pasture, would be invaluable. In the yeaning grounds, what shelter more natural or useful than frequent clumps or bushes of juniper? And (in the hills always) nothing adding to the bulk of wholesome pasture can be counted a weed. My mountain shealings would assist in all these.

Therefore, in every spot favourable to these purposes—that is, convenient as a centre to the charge of a shepherd of five hundred or a thousand sheep—a shealing should be put down, with some meadow-ground about it, or some valleys capable of being turned into meadow, and of furnishing a suitable yeaning ground in spring, and a retreat from cold or starvation in winter; have its cow for the purposes of the shepherd's family, or for the lambs in spring, and a horse for the purposes of the pastures; but in other respects be as secluded as possible, though always comfortable as a human habitation. In this way, the hills would be no longer deserts, nor would they be the seats of a redundant population. There would be land-marks and shelter for man and for beast, and no dangers to either, such as at present afflict them.

But would these not infer a care too great, under any probable or almost possible increase of the amount and value of the stock? No care can be too great that is repaid by its results, and I think this would be so richly; for I think both the number and the quality of the stock would be improved beyond any thing we can easily conceive: and for the object, is it not more natural to create a climate and food for animals that would naturally and inevitably improve their quality, besides increasing their number and their comfort, than to go on endeavouring, at great expense, to produce *monsters*, (for all unnatural mixtures are so), that are only born to *deteriorate* or *die?* Besides, though Culley and Bakewell tried many things, and succeeded in many, have they, or any, succeeded in going against climate? Neither the Merino on the one hand, nor the Black-faced on the other, have been made to impart any of their valuable qualities to stock in England; because the climate is too cold for the one, and too warm for the other. Their produce becomes, in spite of every thing, the creature of the climate, and the same has happened in Scotland as to English sheep. Therefore it is not only proper, but indispensable, that we should think of climate as a first thing. Without this, breeders are no better than doll-makers; producing animals admirable to be looked at, but wholly unfit to perpetuate themselves in the circumstances in which they are placed. We might just as wisely plant a plum-tree on an unsheltered heath, and expect it to produce or perpetuate itself in that situation, as the fine sheep of Lincoln or Leicestershire, or even off-shoots from them, in the unsheltered hills of Scotland, the regions of the Black-face and the goat.

What is to be done, then, but immediately, and with the viour of conviction, to set about the shelter, and, in concurrence with it, the culture of hills, so far as these measures can be prudently carried? There is no question—there can be no question—that much *may* be done in this direction; can there be any question, therefore, whether it *ought* to be done? I think not.

Every farmer, then, should impress it upon his landlord, as *indispensable to their mutual interests*, and in every way seek and facilitate it; engaging, if his landlord will not, to improve as far as he can, on receiving a lease of suitable length, and suitable ameliorations at its expiry. And every landlord should deliberate with himself, whether every improvement he sees about him has not proceeded from shelter and care? and whether these do not demonstrate to him, that what has proved useful in the valleys, must also prove so, to a greater or less extent, in the hills? The conclusion cannot be doubtful, nor his resolution in consequence. He *must* prefer being the master of sheltered and cultivated hills, bearing in comfort the utmost amount of stock they can by rational management be made to bear, and paying £5 for £1 of income, to being the lord of a parcel of hills in a state of nature, bearing in misery a starved and worthless stock, not more numerous or valuable than they might have borne at the creation; a sort of *Esquimaux landlord*, living on the miserable products of a miserable climate, instead of the abundant and vigorous products of a climate corrected by intellect and industry. At least, the landlord of an unimproved hill is no wiser than the landlord of an unimproved valley; that is, if hills are capable of improvement, and of this there seems to be no rational doubt.

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* This name is probably provincial, as it does not appear in any dictionary. I think it is the *Aira cæspitosa*, or *turf hair-grass*.

And how is this improvement to be gone about? I think thus: First, by drawing the great external lines in whole or in part; for even the smallest part would do good: next, by adding the occasional shelters; and lastly, by gradually filling up the internal and more limited details. In this way only can full justice be done to the scheme. It may be varied in many particulars in the way of testing its utility; but shelter, general or partial, and if not general, then, so far as it goes, complete, must always precede any other improvement, to be at all considered as following up this idea.

To follow out this idea in all its extent would not only cause a good deal of immediate labour, but the permanent population of the hills must be increased at least a little. This is contrary to the doctrines of late economists; but I could never respect those economists who would separate the people too completely from the soil; for it affords the best measure of their numbers, and their surest footing as a state. In particular, I could never look on the green spot that had once been a human habitation, now gradually returning to its original valueless state, without thinking that, for the pasture of half a sheep, the owner had sacrificed a human family; a moral accession to the state, succeeded perhaps by a moral nuisance; and a military one of such value, as being wanted, might one day render the whole of the possession valueless, except to the invader. Though we should desire anything, therefore, but to see the hills overpeopled, I think there could be no reason to regret seeing them peopled to the extent of a shepherd and his family for every 500 or 1000 sheep.

I know of what value it is, or at least of what value it is considered, that sheep should have considerable freedom of range; and I have provided for it accordingly, by suggesting that the shelters should all be permeable. This is indeed necessary to their acting *as* shelters and not as prisons; therefore that point is conceded in the meantime.

But what disturbance could possibly arise to the sheep from the circumstance of the shepherd having, in some sheltered nook, a cottage, perhaps a little garden for pot-herbs, and a paddock for a cow, or even a considerable field enclosed and cultivated for the purposes of the flock? Would not the wildest sheep, if they found superior pasture there, or even superior shelter, resort to it with pleasure at any time, and particularly in a storm? And if in that neighbourhood there were the yeaning-ground, with its shelter and more succulent pasture, and there not only the lambs found care and protection, but occasionally the whole flock, both from the weather and from pursuing animals, would the shepherd's cot prove such an eyesore? On the contrary, it would prove the most useful part of the improvement.

But I believe there is little doubt that sheep only seek *variety* of *pasture*, and *not excessive wandering*; and that, could they find variety without wandering, they would as certainly settle down into fat contented denizens of a dozen acres, as any sportsman, placed in a preserve, would cease to insist on wandering through the birdless hills. In short, the black-faced, long-shanked, stag-like denizens of the bleak and barren mountains, would, if they could find suitable food without wandering, settle down into the heavy and short-legged Dutch-built mutton-makers we wish to see them. I have suggested many plans for giving them both variety and abundance, coupled with just such exercise as would add to their value, without delaying their maturity as it is delayed under the present system. I have proposed, by the abundance and value of their summer pasture, to hasten them during that period; and by providing shelter in spring and winter, and by every precaution against want, to prevent them from either being deteriorated or lost during those seasons. These, it will readily be admitted, are very proper; the only question is as to how they may be effected, and upon that point I have endeavoured to give my best advice.

I need only say farther, that the very little, and, I think I may add, inadequate attention hitherto paid to the comfort of sheep, both at the period of their bringing forth and to the lambs after being brought forth, and to the preservation and full subsistence of the flocks in general in winter, must be regarded as something akin to the miserable state of things that existed as to black cattle before the introduction of a productive agriculture and winter crops; when their existence during the winter was a lingering death, and summer was half spent before they were restored to vigour, to be followed in a few months by a repetition of the horrors of winter. Were not this the case, how should we hear of the havoc caused among lambs by a cold or wet spring, or among ewes by rot by a wet autumn, or the losses and deterioration of sheep stock in general by a severe winter. We hear of nothing like this *now* as to black cattle, except among the poor Highlanders; because more ample provision is now made as to cattle against every probable contingency. Sheep equally deserve this care, and upon every well-ordered farm it should be made; and I have very little doubt it speedily will be made, as regularly as to sheep, and even hill-going sheep, as already it is in the case of black cattle.

In the meantime, it is no wonder if the animals fed on our hills are not considered mature for three or four, or even five years, while, in the case of what may be termed the Lowland breed, maturity is reached in half the time. Which is the most humane system? which the most profitable?—full feeding and quickness of product, or starvation and delay?

And even in regard to the Lowland breed, the arrangements are anything but perfect. A regular principle of keeping them in comfort, and of preparing them for the table, is perhaps not known. The most incongruous food is, I believe, given, and this without exercise or variety. The character of the animal, its habits, and natural food, are equally disregarded. A creature that delights in dryness is left to wander in plashy meadows, or in wet cultivated, perhaps fallow land;—that delights in variety of food (being a sort of save-all of herbage), is barbarously confined to *one* food, and that certainly not natural to it, and of necessity often breathed upon, which all animals abhor. I can never pass a flock of such animals suffering under what may be termed a turnip diarrhœa, without thinking of the poor gruel-fed inmates of English poor-houses; nor see the hard, stringy, juiceless, savourless matter so produced at table—neither beef nor mutton, but a sort of turnip leather—without wishing that people would give premiums for discovering the fit food of men and animals, instead of for finding out stars whose rays would not yet have reached the earth (according to calculation), if they had begun to send them forth some thousands of years before its creation.

At least there is a want of *perfect* arrangement in this matter. It is probable that, by-and-by, keeping the animals dry, and giving them at least a degree of exercise, and greater variety of food, will be considered indispensable; that a food more suited to the character of sheep has yet to be discovered for them while in the pen; and that, by following nature more closely in this particular, and in all particulars connected with the treatment of the animals, the comfort of the animals will be increased, as well as the profits of their owners; and competition with them in their own markets rendered impossible. One of the greatest steps towards this natural arrangement would unquestionably be, procuring them the natural food, or that great mixture of the natural food, and the air and exercise, that shelter would give.

I therefore very earnestly recommend to consideration the shelter and improvement of our hill pastures. I think it is an evidence of deficient sagacity in the owners of those hills, that they have not anticipated the demand that will now certainly be made for the free importation of all articles, forming merely accessories of agriculture. Had they done this in time, no imported article could have competed, almost in any degree, with the wholesome and tasteful produce of our own mountains. But a taste once formed, or at least debased, even to garbage, may with difficulty be reclaimed.

I had almost omitted to notice a circumstance which to most will seem secondary, but not exactly so to some whom it is important to interest in this matter, and whom I have sedulously been addressing; and that is, that those woods I have been recommending as shelters, and the other consequences of their existence, would exceedingly increase the food, and of course the quantity, of *game*, and this of every description. Wherever there is plenty of heath, crowberries, fir-tops, &c., there also there will be plenty of grouse, black-cock, and pheasants, &c.; and the pastures of the woods would encourage even deer, if the woods were open, and we would suffer them to live.

Having thus exhausted my own ideas, I sought for their confirmation by a practical friend; and I am happy to say that he has not only declared these opinions in general to be in accordance with his own, but has in some particulars where I most doubted, enabled me to be explicit.

I doubted whether hill-cultivation of any description might not seem too speculative; and he supplied me with evidence of the advantage of ploughing down coarse pasture from his own experience — he having done so with the best success.

I doubted whether the idea of erecting hill-shealings, and of cultivating crops never to be ripened, but used in the green state for the stock, might not seem exceeding the general ideas of practical sobriety; and he mentions that an experienced sheep farmer of his acquaintance, having taken a large holding in Strath-Tay, has selected 200 acres of land, on which he is to erect, *not* merely a hill-shealing, but a regular farm-steading, where steading never was before; and not to cultivate crops for the market in any part, but, as I have instinctively suggested, for the use of his stock; and he expects, with the utmost confidence, that, by thus aiding the natural pastures, and by such shelter as can be afforded even by *sheep-houses* in convenient situations, he shall be able greatly to increase his stock, as well as improve its character.

I did not venture to urge improvements so expensive as this; I looked forward to mere hermitages for the accommodation of solitary shepherds—or at farthest a shepherd and a labourer; though I knew that in many situations sufficient land fit to be cultivated for many purposes might be found in contiguity. Neither, perhaps, has this enterprising man thought of *shelter* upon the principles I have been for some time recommending, nor of the *discursive* hill-husbandry I have now ventured to recommend. But hearing what I have now heard, I think it probable that the two systems may be combined; that, with a considerable steading for improving the lower pastures in a regular manner, subsidiary outposts may be considered proper in the hills; particularly if, by shelter, the climate can be so ameliorated as to change, as I have anticipated, the relative characters of these regions; shifting as it were the temperature a stage higher; and making even the highest pastures a scene of improvement, and of comparative warmth and abundance.

Meantime it is but doing justice to these suggestions to state, that the friend to whom I have just referred has for years been sheltering his own farm, though not on any regular and comprehensive plan; and that, from what he has done, he has been enabled both to improve the pastures, and to provide a degree of winter food; and, in consequence of both, is enabled to keep, not only a much heavier stock, but also one of a much-improved description. Though we have been acquainted for many years, I had not heard of this, for it is a recent pursuit; but, so far as he has gone, he completely confirms my impressions; and if seconded by his landlord in the way of more substantial shelter, would, I have every reason to think, confirm them still farther.

These statements will doubtless draw forth the opinions of some other friends; and if these shall supply anything material, or in anything materially controvert me, it shall be given; if not, my labours in this department are ended. I cannot but look back on what I have said with satisfaction, as tending, as I think, to recommend and assist in a most important subject. If I have been too full and earnest for men acquainted with the subject, it is because I have been addressing more than one class; by which I mean, landlords as well as tenants, and to the first in was necessary to be very explicit. It was necessary to show them, first, that the thing is really wanted, and would be desirable if attainable; and next, that it would certainly be successful and profitable.

In this view, I continue to say that I believe hills, at present the most bleak and barren, might very soon be turned into comparatively abundant and comfortable pastures, valuable alike to the owners and the state; and that I consider the idea of improving the comfort and productiveness of hills, as claiming more immediate attention than even that of the valleys: for in the valleys much is already done, and, by one accident and another, is everyday doing; enclosures of a better description, belts of wood, &c., being in continual progress, though rather for ornament and defence than for shelter, though that also follows. But in the hills nothing has been, or it has in many instances been done amiss—that is, by clothing them completely. The idea of looking to the hills, as subjects of systematic improvement, and of cultivation in the way suitable to hills, is untried; but if followed out with caution and judgment, it cannot, I think, fail to be successful, and therefore I sincerely trust it will be adopted and tried.

To be as specific as possible, I would gladly give a few examples of where I think the system might be tried with advantage; although I think I might in this view place almost in any quarter of Scotland, and say "*Circumspice*,"—look around you.

All Sutherlandshire would seem to me very susceptible of improvement upon these principles. It is true the shepherds of Sutherlandshire must at present drive their flocks many miles to be clipped, because there are no carriage roads for their wool; but this should not be necessary. Roads once made in these remote regions are very easily kept in repair; and a chain of lakes runs almost across the country from Dornoch to Laxford, or to Loch Kyle, offering an easy opportunity of water-carriage; for they might in all probability be easily rendered navigable from sea to sea, and so at once carry commerce into the heart of the very extensive and important district of Sutherland, and save the horrors of navigating the Pentland Frith. Writers have hitherto trifled with this subject, describing Loch Shin as looking like a great ditch, &c.—that is, as being unpicturesque, from wanting romantic headlands, foliage, &c. This very tameness, however, may be its greatest recommendation, as indicating the want of those features that occasion flaws of wind, and consequently opposition to navigating it for useful purposes: and we hope no topographical survey will henceforth be considered complete that does not convey an accurate knowledge of the capabilities of the country described, *for economical purposes;* that is, a distinct description of the extent of reclaimable heaths, as well as of the valleys that have been reclaimed; an account of the state of hills and mountains, at the various heights considered capable of being rendered available for the pasture of different animals; and of the existing depths of lakes and rivers, or the depths that might be given them for adequate purposes; how far they might be made navigable if necessary, or must be assisted by canals.

The slope of Stratharrock on the bank of Loch-Ness, and consequently in the immediate neighbourhood of steam navigation, seemed (in 1814 at least) a very suitable subject for shelter. On the very summit there is a very beautiful lake, and near that lake the height terminates abruptly on the west, and you look down on a comparatively low valley leading to Fort-Augustus at the head of Loch-Ness. The evening sun was shining upon this height and lake when I saw them; and I thought that, were the district sheltered and cultivated, and a town built there for the manufacture of the wool of the surrounding country, it would be as picturesque as the finest of the old Latian towns.

From Fort-Augustus to Corryarrick, at the source of the Spey and opening of the vale of Badenoch, there is a very high plain of eighteen miles, of which I have already spoken as bare and tenantless, but which, from the remains of a remarkably large tree there, I have every reason to think has at one time been the scene of the noblest forests, and which by shelter I am sure might be made fertile and useful again. It is, as I have said, eighteen miles in length, and in some places probably little less in breadth—a space of great importance in a country so limited as this, and it seems peculiarly calculated to receive benefit from shelter; for, though lying positively high, it is relatively low, being surrounded by higher hills.

Dalnacardoch-moor, in the way from Dalwhinnie to Trinafoure, is another moor of very considerable extent, and very suitable as a subject for shelter. It is especially open on the east; but being sheltered on that side and on the north, it would then lie beautifully to the sun.

But there is hardly a district, east, west, north, or south, in which hills or plains might not be found offering the greatest capabilities of improvement by shelter, at least to the eye of one intent on finding them, and that, in twenty years from the date of their enclosure, might carry beeves, where they cannot at present carry sheep.

This, as lawyers say, is my case; and if this is *possible*, should it not be enquired into? I should say it were worth testing, even at the public expense; but in Scotland there are many landlords who have only to believe the thing feasible to give it the fairest trial at their own expense; and I hope this may fall under the eye of some such, or obtain the good opinion of some equally spirited farmers.

IMPORTANT EXPERIMENTS IN HARVESTING CORN, &c.—At a late meeting of the Torringtons Farmers' Club, Mr. Powlesland, of Friers' Heale, Barton, Meeth, offered the following observations relative to harvest work:—"I was some few years ago in Wilts and Hampshire, I believe in the last week of September or the first week in October; it was in a late wet bad harvest, I saw them cutting their spring corn in a wet state, and taking it up after the scythes, and standing it up loose in a shock, or what we call here goating it; and to my surprise, the first dry day, the corn managed in this way was dry. They then saved it in this loose condition and put it into the rick in the same manner as we put hay, so that while we on our plan should have been gathering, binding, and dozening the corn, my friend had nearly saved sixty acres. He gave me his opinion that by putting the corn in the rick in this manner, the ears of the corn do not come to lie together in the rick as they do under our management, consequently the straw absorbed the sweat of the corn instead of its healing; two years ago I adopted this plan of saving my barley, and found it to answer, as my Hampshire friend assured me it would. Mr. Arnold, a very good and respectable maltster of Exbourne, at that time applied to me to purchase some barley that would make good malt, it being in general so badly saved; he took samples from many of my ricks, saved in the way I have described, and tried it; he was pleased with the result, purchased the barley, and found it to answer a good purpose. I next recommend a change in our sheep stock, as the seed corn, but I do not allude to the tip-top breeders, or what we call top-sawyers; I recommend it to those who have got to farm the land of this country. My plan is to change nearly all my old sheep every year; by so doing I keep up the size and quality; I sell out most of my sheep in October, and replace them from Bampton Fair, the same month, as I do not think our country is adapted to keep a standing flock any length of time without the risk of a sacrifice. This change can always be made with as little expense comparatively as that of the seed corn. Now as to ploughing; my plan is to put eight younger bullocks to make the plough, the man to take four in the forenoon and four in the afternoon, and never to let an ox work more than half a day at a time; in this way the farmer may be able to keep up his plough by his younger bullocks coming in progressively from his own farm stock, and keeping his plough going and in good condition, as the renting farmer does not always want to keep his oxen at work. I do not recommend the North Devon ox, but I give the preference to the Cornish ox for the working purpose, and the North Devon ox for the grazier's purpose for fatting, as the North Devon ox is more delicate and higher bred; in that case it wastes more with its work, and it also impedes its growth."

ON CIDER MAKING.

The following letter from Jas. Richards, Esq., of Dumbleton, was read lately at the meeting of the Winchcomb Farmers' Club. At this season of the year it cannot but be useful to many of our agricultural readers.

Dumbleton, August 23rd, 1841.

My Dear Sir,—In conformity to the request of the Winchcomb Farmers' Club you kindly transmitted to me, I give you the process of making my best cider and perry, and in as few words as I am able to convey it.

The apples being ripe and laid in a heap a fortnight, exposed to the weather, uncovered, about eighteen inches deep, they are then ground in the cider-mill, which consists of a circular stone in form of a solid broad wheel, about 4½ feet in diameter, 14 inches wide, and weighs about 18 cwt.: is supported on its edge, and drawn by a horse in a circular trough of stone, about 8 feet 9 inches in diameter, and about the depth of 12 inches, including the wooden rim upon it, which is three inches, and much like a bark-mill. In this trough near two bushels of apples are ground at a time, with a handful of charcoal strewed amongst them, until the kernels and rinds are broken small, *as much of the strength of the cider depends upon it*. This fact was proved in the Agricultural Report of the Rev. John Duncomb, in 1813, by an experiment made by Dr Symonds, of Hereford. "He made one hogshead entirely from the rinds and cores of apples, and another from the pulp of the same fruit. The former was of the most unusual strength, and high-flavoured; the latter was watery, and possessed not one recommendation."

A horse with a man and boy will grind sufficient pommage to make two hogsheads of cider in a day, which is left in open tubs twenty-four hours. It is then pressed between several haircloths by a strong screw-press, and the cider is taken to the fining house, and put into a hogshead or longer vessel. In a few days it will ferment, and throw up the must. When that appears it is drawn off into tubs, and about one pound of pulverized charcoal is stirred in it, and is left for some hours, or until the next day, when it is put into the dropping bags to fine and to stop the fermentation; and with one dozen made with *thin* calico of sixpence the yard, suspended from frames, the cider is passed through, *being previously dredged inside with pulverized charcoal.* These dropping bags are in the form of ordinary jelly bags, and their hoops are fourteen inches in the clear. For a short time the cider will run muddy through the bags—by continuing to fill them it will soon become clear. The muddy cider in the tubs is then removed.

From one to two hogsheads a day will fine by the process, but some fruit fines much quicker than other: *the apples should not be too mellow*, and pears when quite ripe should be ground as soon as collected. Apples with yellow pulps, and red and yellow make the best cider—green apples the worst. The cider you call "delicious" was made with pearmains, Blenheim oranges, and bromleys, mixed in equal quantities.

The dropping bags must be replaced by clean ones the next morning to filter the cider left.

The cider being now fine, with the full flavour of the fruit, it is put into a cask in a *cool* cellar with the bung off. Within a few days another fermentation will commence, and the cider will have a pearly whiteness, being the commencement of the acetous fermentation. As soon as perceived, it must be run through the charcoal bags as before, but it will pass through *four* of them quite clear in less time than it previously ran through the twelve. It is then put into the cask, and left with the bung off until March, but should any fermentation be afterwards perceived, it must be drawn off to stop it, and returned to the same cask or another.

In making the common cider, it is carried to the cellar direct from the cider mill, and is left to its natural fermentations until December, when it is bunged close. But if any part of the best be wished to be preserved for the use of the family, it can be filtered in the cellar after throwing out the must.

Every vessel used must be quite clean, and free from the acids of bad cider or other liquors in the wood, or the whole will be spoilt.

The first fermentation is the vinous, the second the acetous, and the last the putrefactive: the use of the charcoal dropping bags is to fine the cider and *stop the fermentation at the vinous process*, and which it does effectually; and in the same manner all wines can be fined and the fermentation stopped whenever required, and the flavour of the fruit preserved. But these charcoal dropping bags are also valuable *to cleanse impure water at sea*, impure river water which supplies large towns, and soft water for washing, by removing the soot and dirt from it. That they have been only partially used since the years of their discovery, notwithstanding *the cost of each bag does not exceed sevenpence*, can arise, I fancy, only from the common practice of rejecting everything that is new for a while, however good and useful for general comforts, until good sense triumphs over the prejudices of vanity.

Ever, my dear sir, your's sincerely,
James Richards.

To Edward Holland, Esq.,
Chairman of the Winchcomb Farmer's Club.

OBSERVATIONS ON THE NATURAL HISTORY AND ECONOMY OF THE DIFFERENT INSECTS AFFECTING THE TURNIP CROP.

BY JOHN CURTIS, F.L.S., ETC.

(From the Journal of the Royal Agricultural Society of England.)

Unless we collect facts on good authority, and conduct experiments with care and perseverance, our labour will be lost in studying the economy of the insect tribes; for in the investigation of such living atoms, as they often are, the slightest error may lead us far from the truth. It is not to be expected that a taste for such studies will be universal, though all who can appreciate the value of a good harvest will take, it may fairly be presumed, an interest in our researches. Such a taste, however, where it does exist, is easily improved; and it is a truth admitted by all who have indulged in such pursuits, that they never repented of the time that had been given up to these laudable objects; and independently of the amusement to be derived from the investigation of nature, any benefits conferred on man by such knowledge ought ever to be a source of real satisfaction, and of honest pride, to every cultivator of natural science, however trifling his contributions may be to the general stock of information.

Unimportant as insects may appear to the casual observer, they often prove awful visitations when employed by the Creator as his armies to fulfil his ends. No one suffers more from these hosts than the agriculturist; it is therefore impossible that he can remain an indifferent spectator whilst it may be in his own power to palliate, if not to avert, the evil. I therefore hope that these memoirs, by calling the attention of the farmer to so important a subject, may lead him to useful and profitable results; and should he derive as much advantage from their perusal as I anticipate of pleasure in their detail, it will prove to me a source of unfeigned gratification.

I am aware that one of the greatest difficulties the farmer has to contend with is, that invariable law of nature which compels him to change his crops, from the exhaustion of certain elementary parts of the soil, which are absorbed or neutralised by the vegetable that is produced; and with all his art in selecting manure and resting the land, it will become tired at last, and by degrees refuse to produce certain crops nearly altogether: it is even asserted of the turnip, that it certainly does not grow so vigorously nor so readily as it did several years ago. It is natural to suppose that as this period approaches, the crops will become, from feebleness, more susceptible of disease; and as insects are intimately connected with this subject, contributing in no small degree to the dissolution of vegetables, and the failure of our crops being frequently very justly attributed to them, this is a matter well deserving of our attention, and in pursuance of this object we will first consider those insects which attack the turnip, a root of the greatest importance to us all; for without turnips our sheep and cattle would be deprived of one great resource, so that we should be almost unable to procure fresh meat in winter, most essential to the health of man; and the land again would lose that fertility which in feeding off the turnip we secure for the succeeding crops.

No crop is subject to the attacks of a greater number of noxious insects, &c., than the turnip. First, the ants run off with an incredible quantity of the seeds; then come two sorts of turnip-fly, the striped and the brassy, which destroy the tender leaves as soon as they burst from the ground; at the same time we have the maggot of a fly and the wire-worm, both living upon the young roots; and also a large caterpillar or grub, when they are more advanced; then follow armies of black caterpillars, reducing the leaves to skeletons, and the blight of the plant-louse, together with a minute moth; we may add also two weevils, which cause the lumps or excrescences on the bulbs; with slugs, snails, and mildew bringing up the rear.

Before entering upon their history, it will be necessary to make a few observations relative to the economy of insects, which I beg may be borne in mind in the perusal of these papers, as they will be of service in the investigations I propose, and in which I hope every practical man will lend me a hand; they will also smooth the road to those who have not a scientific knowledge of insects, and are not skilled in the study of entomology.

Insects have been divided into large masses, named ORDERS; these are subdivided into lesser groups, called FAMILIES, which comprise smaller companies, designated GENERA; and each of these consists of more or fewer SPECIES, or different sorts, which occasionally vary in size and colour, and such are termed VARIETIES. Another still more important fact to be remembered is, that all insects progress through several stages:* *first*, the female lays an egg; this *egg* hatches and produces, *secondly*, a *larva*, which is a little animal called a maggot or gentle, a caterpillar or canker, a worm or grub, &c. Thus we have *maggots* in cheese and meat, called gentles by anglers; *caterpillars* on cabbages, *cankers* in roses, *wire-worms* and *silk-worms*, and all sorts of grubs. When any of these have fed until they are full-grown, having been compelled to cast their skins several times as they increase in size, they change, *thirdly*, to a *pupa*, chrysalis, aurelia, or nymph: they either enter the earth for this purpose, as most naked maggots do, or, like hairy caterpillars, they spin a web, in which they undergo their transformation or change; but the caterpillars of the cabbage-butterfly, and many others, merely suspend themselves to a wall or rail, and there remain unprotected during the winter. In this state they all rest without any symptoms of life, except when touched, until the substance of the enclosed larva has become perfected into the various members of its first parents, when, *fourthly*, out comes a flesh-fly, a butterfly, a rose-moth, a click-beetle, a turnip-fly, &c.; and this is called the *imago*, or perfect state.

The turnip-beetle, with whose history we will begin, belongs to the ORDER COLEOPTERA, from its wings, with which it flies, being folded beneath two horny cases. It is included in the FAMILY CHRYSOMELIDÆ, or golden beetles, for certain scientific reasons, in conformity with its structure, and is one of about one hundred species, forming the GENUS ALTICA, sometimes written HALTICA.

The *striped turnip-beetle*, or, as it has been called, the turnip-fly, turnip-flea, earth flea beetle, black-jack, &c., is named in our catalogues ALTICA NE-

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* Plant-lice often bring forth young, instead of laying eggs, and so do blue-bottle flies, but not always; and there are a few other exceptions.

MORUM.[*] The former word, derived from the Greek, alludes to the leaping powers of the genus, and the latter signifying that this species inhabits woods and groves, which were more especially its haunts before the cultivation of the turnip became general.

The economy of this little pest has puzzled the man of science, as well as the practical agriculturist, for many years; and for want of that rigid care which is indispensable in the investigation of natural history, numerous errors have been adopted, which have led to the promulgation of many false theories. Dr. Pearson believed at first that the white spots or dots observable on more than half the turnip-seeds were the eggs of the turnip-fly; but he was compelled to abandon that opinion, "having had no flies where the seed was sown in soil contained in pots covered with bell-glasses." "Rusticus," however, a contributor to the *Entomological Magazine*,[†] so strongly insisted upon it, that seeds steeped in brine, or otherwise prepared, have been sold in London at the seed-shops, to insure the grower against the attacks of the fly. It is exceedingly likely that the white dots are occasioned by minute flies alighting upon the seeds while they are drying, and depositing their excrement upon them, which is often white; or they may be particles of pollen from the flowers. It was, however, from the careful investigations of Mr. H. Le Keux[‡] that we were first made acquainted with the actual economy of this little beetle.

If the spring be warm the sexes pair from April to September, during which period the *eggs* are deposited by the female on the underside of the rough leaves of the turnips. She lays apparently about one egg daily; and ten pairs laid in a week only forty-three eggs. This indeed was under confinement; but the correctness of this estimate is supported by the fact, that in leaves taken from the field, containing as many as six larvæ, they were all of different sizes, indicating a variety of ages. The eggs are very minute, oval, smooth, and partaking of the colour of the leaf. They are hatched in ten days; and the little maggots immediately begin to eat through the lower skin of the leaf, and to form winding burrows by feeding on the pulp. These burrows are visible enough to the naked eye when the larvæ leave them, and the cuticles are withered and discoloured; but in their early stage they are discovered with difficulty: indeed it is only by holding the leaf up to the light that they can be well detected.

The *larvæ* are pale, fleshy, and cylindrical, with six pectoral feet, and a proleg at the apex: the head is furnished with jaws and large dark eyes; and the first and last segments bear dark patches they are full fed in about sixteen days, when they desert their burrows and bury themselves not quite two inches below the surface of the earth, selecting a spot near to the bulb, where the turnip-leaves protect them from the wet and drought.

In the earth they become immoveable *chrysalides* which are brought to maturity, I believe, in about a fortnight, when the beetle or fly, as it is called, emerges from its tomb, again to fulfil the laws of nature.

The *beetles* are shining black, minutely punctured; the head is rather small, with two prominent orbicular eyes, finely granulated; the mouth projects a little, the upper lip and feelers being visible: just above the nose are placed two longish horns, each composed of eleven joints, the three next the head ochre-coloured, the first being the longest, the remainder dull black, the terminal one pointed: the thorax, or trunk, is broader than the head, narrowed a little before, with the sides rounded: the two wing-cases are moveable, and form an oval; they are twice as broad as the trunk, and four times as long; each has a distinct ochre-coloured stripe, sometimes approaching to white, running down the centre, generally winding a little on the outside, near the middle, and curved inward at the extremity: beneath are ample wings, twice as long as the body, and folded up for protection when unemployed: the legs are of a rusty ochre, the thighs pitch-coloured, the hinder being very thick and formed for leaping; their tibiæ, or shanks, are slso the stoutest and thickly fringed on the outside towards the end: the feet are all composed of four joints, the tips as well as those of the shanks generally pitch-coloured; in the hinder pair the basal joint is considerably the longest; the third is formed of two slightly dilated lobes, roughened beneath with fine hairs, as well as the two preceding joints, for the sake of adhering to smooth surfaces, and they are thus enabled to ascend glass; the fourth joint is slender and club-shaped, and always furnished with two minute claws.

The mouth is composed of six parts; the upper lip or *labrum*, is large, broader than long, and a little narrowed before; the anterior margin is slightly concave, and furnished with two short bristles. The *mandibles*, or teeth, form two sets, one placed on each side, so as to meet; they are strong, bony, and semilunate; one terminated by three, the other by four sharp strong teeth; the second being the longest, the lower one smallest The *maxillæ*, or jaws, are two, placed on each side, beneath the teeth: they are small, terminating in two lobes, densely fringed with fine hairs at the apex; the inner lobe the largest, somewhat orbicular; the outer one smaller, being an articulated, somewhat ovate lobe: on the outside of each jaw is attached a moderately long and stout feeler or *palpus*, composed of four joints: the basal joint is clavate, the second is obovate and truncated, the third is much stouter and similar in form; the fourth is the longest, stout and conical, being somewhat pear-shaped. The *mentum*, or chin, is somewhat quadrate, the sides are convex, with the anterior angles acuminated: the *labium*, or under lip, is somewhat quadrate, horny and truncated at the base, with a leathery oval lobe in front; the sides are excavated to receive another pair of small feelers, or *palpi*; these are very short, stout, and composed of three joints only; the basal joint is cup-shaped and scarcely visible; the second stout and oval; and the third is very slender, with the apex pointed.

The length of the beetle varies from ¾ to 1¼ of a line; the line being the twelfth part of an inch: the longer ones are the females, which are considerably stouter than the males, and this is especially the case after impregnation.

When the beetle is feeding, the different parts o the month are all employed: the upper and under lips open to liberate the other organs; the two sets of teeth, or the toothed mandibles, as they are named, meet when closed, and from their strength and horizontal action they readily break the cutile of the leaf. Indeed, some that I put into a quill soon reduced the inside of the cork stopper to powder. The jaws seem to be adapted for keeping in the food during the short process of mastication, and the four feelers hold and steady any portion of the leaf to be eaten, and assist in conducting the detached morsels into the mouth.

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[*] Vide Curtis's Guide to an Arrangement of British Insects, second edit., col. 74.

[†] Entomological Magazine, vol. i. p. 363.

[‡] Transactions of the Entomological Society of London, vol. ii. p. 24.

From the experiments so successfully conducted by Mr. Le Keux, it appears that the female beetle lays but few eggs compared with most other insects, and that it requires a period of about thirty days to carry the animal though its various stages up to the time when it becomes a perfect beetle again, viz., it remains an egg ten days, a maggot six, and a chrysalis fourteen days: the beetles themselves are rather long-lived, for they have been kept in that state from July until the following February.

The turnip-beetle, and all the species of *Alticæ* related to it, are readily known by the great thickness of their hinder thighs, which gives them the power of leaping, like fleas, to a prodigious distance, considering their small size. Eighteen inches is about the greatest extent of their leap, which in a straight line would be, averaging their stature, 216 times their own length: and when it is remembered that this leap is performed in a curved line, it must be admitted that a considerably greater distance is achieved. They seldom walk, and when at rest sit with their hind legs folded under them, ready to skip off in an instant, if disturbed, or when even approached: in warm weather, during sunshine, with the thermometer standing between 70° and 80° in the shade, they fly with facility.

This little plague is not confined to our island, for it is abundant in Germany, and common everywhere in Sweden, where it is very destructive in its perfect state. Probably in England no portion of the country is perfectly free from these insects, at least every bank and meadow harbours them to a greater or less extent, and they have been found also on grass lands which had not been ploughed for many years, and where there were no turnips within half a mile. It will be necessary to consider this part of their history before we enter upon a discussion of the remedies. The turnip-beetles hybernate, or live through the winter, in a torpid state, and may be found under the bark of trees, as well as beneath the fallen leaves, in the chinks of old timber and paling, the stumps of thorns and of other bushes, where the bark does not adhere close to the stem, and the hollow stalks of grass and stubble seem to afford them an asylum during the inclement months of winter; but inactive as they then are, the warmth of the hand is sufficient to revive them in a few minutes, so that an unusually mild day in January or March will partially seduce them from their retreats, and will render them almost as active as would the ardent sun of summer.

On the first indication of spring, if the weather prove fine, warmed by the sun and cheered by his rays, they arouse from their slumbers, and permanently leave their winter quarters for sunny situations, where they may be seen sitting on walls in considerable numbers, or sunning themselves on dry banks and on clods of earth, protected from the wind: they have been observed in gardens on turnips and cabbage-plants as early as March, and in April on the crops in the fields, but May and June appear to be the more usual periods of their first and most fatal attacks. The autumnal crops have been occasionally destroyed by them,* and in one instance I have seen recorded, as late as the middle of September. They may be said to be abundant from May to October amongst the grass, and in all fields, whether of wheat, oats, or barley: a friend of mine observed myriads on turnips in Surrey, on the 2nd of September, but they all disappeared in two or three days; and both sexes were common on the white turnips in Dorsetshire last October.

It seems that the taste of the turnip-beetle is far less fastidious than is generally imagined. This might be fairly inferred from its abounding in situations where the turnip does not grow; there can be little doubt, however, that it prefers those plants which are termed cruciferous, from the shape of their flowers, of which cabbages and turnips are examples; of these the leaves of the horse-radish, the common turnip, and the radish, are its favourite food, but cabbages, cauliflowers, colewort, water-cresses, ladies'-smocks, and hedge mustard, called jack-by the-hedge, are often attacked; the charlock or wild mustard is also sometimes covered with them at the end of April, and in May the leaves will be seen pierced with holes, but as soon as the turnips come up they desert other allied plants. Mr. Berry has recorded a remarkable exception, for he says that after consuming the cabbage plants, the flies† attacked and destroyed the young hops, which belong to a very different tribe of plants. Köllar also states that both summer and winter turnips left for seed suffer in warm and dry weather, from the attacks of the fly injuring the flowers, so as to spoil the produce of the seed.

The next subject to be considered is a remedy against the attacks of the turnip beetle, which in some years must cause losses amounting to an enormous sum of money, for so long back as 1786 Mr. Young stated that the turnip crop destroyed in Devonshire alone was valued at 100,000*l*. Now, with regard to the *eggs*, we see that they are laid on the *under side* of the *rough leaf*, where they are pretty well secured from rain, and also protected by the strong and projecting ribs that support the leaf from any injury that might occur from the leaves being ruffled by the wind or other casualties; and the inferior skin being the most delicate, is best adapted for the entry of the infant and tender maggots into the substance of the leaf. It is not, therefore, at this stage that much could be done in destroying them.

The *maggots*, it is evident, live upon the *rough leaf*, and do little or no mischief to the growth of the plants; they dwell perfectly secure between the two cuticles, unless it be when they leave the burrows they had first commenced, probably not of common occurrence, to form new ones at a remote part of the same or upon another leaf. At this period they are most probably affected by parasitic enemies.

The *chrysalis* is buried only just beneath the surface of the earth, but it is probably protected in a slight web, forming a cradle for it to lie in free from pressure. I think some efforts might be successfully made for its destruction at this time.

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* In 1826 a crop was destroyed at Knutsford after the 21st of August.

† Might not these have been the *Altica concinna*, or some allied species?

It is, however, in its last and perfect state that the mischief is done. It is the *beetle* which destroys the two first *smooth leaves*, called the *cotyledons*, and the heart of the plant between them, by piercing them like a sieve, destroying the cellular tissue and stopping the growth of the plant. They also feed upon the rough leaves, drilling them full of round holes, which are larger on the upper than the under side of the leaf; and if the appetite of the beetle be not satisfied, he enlarges the aperture, and thus gives it an irregular form, which dilates with the growth of the leaf: hence the large holes we see at a later period. After all, it is at this stage of their existence, I am inclined to believe, that we can attack them with the best prospect of success, if they cannot be kept off by other means.

In collecting the turnip-beetles by sweeping and various methods, large numbers of small carnivorous beetles, belonging to the *Carabidæ* and *Staphylinidæ*,* are found with them; these probably feed upon the larvæ; but from the very recent discovery of the early stages of the turnip-beetle, we are yet ignorant of the *parasites*, of which it may be presumed there are more than one species, that prey upon the maggots and chrysalides; for it is a wise dispensation of Providence to keep every animal in check by some other that is either more powerful or more sagacious than itself, and this counteracting effect is produced in a degree equal, or eventually superior, to the noxious animal, so that in a greater or less space of time the destructive power may be rendered no longer formidable, or be absolutely annihilated by the attacks of its parasites. This natural process, though never failing, is often too slow in its operation to secure immediate relief; the farmer must, therefore, devise means, if possible, for the more speedy destruction of the enemy.

The beetles are seldom found in shady places, except during the winter season, and they cannot bear cold and wet, which are great protections against their increase; it consequently follows that warmth and sunshine are far more favourable to their multiplication, and in such seasons they are most to be dreaded. Showery weather, after a long drought, and cloudy days with gleams of sunshine, also render them abundant,† as such seasons do the greater portion of insects, but in a few instances they have been known to do much mischief even in cold weather.

That the turnip-beetle is endowed with an acute and powerful sense of smelling, is proved by his flying against the wind, and deserting all other plants as soon as a turnip-crop appears in his neighbourhood. Mr. Le Keux says that in May, 1836, when the thermometer was 75° in the shade, during a *south wind*, great numbers were on the wing, and all proceeding *southward*; and again, that eight acres, forming the summit of a hill in Devonshire, were sown with turnips, and when the young plants were just rising above the ground, the wind being for more than a week at south-east, wafting the scent to the north-west, they were so destroyed on this side, that nearly an acre was bare, whilst the south-east side was not touched, until the plants had attained a size to render the attacks of the beetle of little consequence.

From what has been stated, it appears that no season will secure us entirely against the attacks of the turnip-beetle, and that no soil is considered safe from them is evident upon the best testimony; it is very destructive upon strong lands; and not less so on light ones. Neither is the period of their attack limited, for as one pair of insects may produce five or six broods in a season, there is a constant succession, which renders any plan for extirpating the beetle in any of its three early stages scarcely practicable. As the turnip when in rough leaf is not in any danger from the attacks of the beetle, it is evident that our first care must be to preserve the young plant, and this can only be done by the preparation of the soil, or using such speedy means the instant the beetles appear, as will destroy or drive them away. The primary object will be to discover the best manure for that purpose, and a dressing that will render if possible the soil obnoxious to the insect.

It has been correctly said, "that the manure which most effectually promotes the growth of the plant will be the best defence from the insect; and that when the growth is slowest, the danger from the insect is most serious." This arises in a great measure from the advantage that insects have over vegetation; a gleam of sunshine is almost sufficient to call them into active life, as we have before observed, and as is evident from the swarms of delicate gnats that may often be seen dancing in the air when frost is on the ground even in January; but it requires the accumulated rays of the sun, and a much longer duration of warmth, to set in action the fluids of plants.

It will not be irrelevant to the subject to take a cursory view of the recommendations suggested by various eminent agriculturists; and as the results derived from some of their experiments have been greatly at variance, I may venture occasionally to offer an opinion; but as it is not strictly within my province to *determine* such practical points of difference, I can only hope that they may be encouraged to prosecute their valuable researches until such variations are satisfactorily explained.

Whether any *direct* protection against the beetle can be expected from manure, since it is ascertained that it is not upon the seeds that the eggs are laid, now becomes a question; for when the maggots escape from their burrows in the leaves, and enter the earth, in order to become chrysalides, before changing to beetles, the manure, I should think, seldom contains sufficient ammonia to destroy them, and, if I mistake not, any moderate fermentation would rather facilitate than retard their metamorphoses; moreover, the instinct of insects is so perfect, that the maggot would most assuredly avoid obnoxious spots, so that, if any manure were spread that would injure them, unless it formed a very uniform stratum, it would not ensure success, although great advantage might be derived from its use.

Burning has been found the best preventive against the beetle by some, which is readily accounted for, since it would destroy any chrysalides in the land, and as the beetles may be in abundance in the field when it is preparing for turnips, burning would, of course, be destruction to them, and spreading the ashes afterwards over the ground will prove an additional security; but such a system does not suit sandy soils, neither can it be followed up regularly on any land.

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* Curtis's British Entomology, folios 446, 758, &c.

† A field of turnips is stated to have been destroyed by the fly in a few hours before a thunder-storm at Rockingham.

Feeding off the turnips is strongly recommended as an antidote to the beetle, as well as from its peculiar advantages of manuring and preparing the land for the barley crop and succeeding seeds. I am disposed to attribute the advantages derived from sheep-folding, as regards the beetle, to the perfect stamping down of the soil and herbage, by which all insect life is destroyed, rather than to any peculiar quality in sheep manure, unless it be contained in their urine.

However Mr. Sutton's "plan of preparing the fallows for the seed, and leaving the land for ten days or a fortnight before sowing," may have answered occasionally, as his hypothesis is not correct, we must look to other causes for his success, and this is probably the exposure of the chrysalides to drought and changes of temperature, which would naturally destroy them; the opportunity the weeds have of growing up and overpowering the crop seems to be a fatal objection to this process. I quite coincide, however, with Mr. Cowdry, that the destruction of the beetle may be greatly facilitated by the mode of ploughing he suggests, for if the chrysalides be deeply buried under the furrow, they will perish for want of sufficient sun and moisture to bring forth the little beetles, or even if they hatched, they would not be able to extricate themselves from the earth heaped upon them; this is taking it for granted that the chrysalides are in the soil, which would depend upon the character of the preceding crop. And here again we require information, for if the maggot of the turnip-beetle will live in the leaves of clover and other artificial grasses, then such a process as deep ploughing becomes an effective remedy; if not, it would only be useful where the first crop had failed from the land being infested with the turnip-beetles.

If the turnip-beetle were not common everywhere in Sweden, it might be presumed that northern latitudes were uncongenial to its habits, for it did not appear to be known in Scotland until 1826, and it has done but little mischief, I believe, since; but this is attributed by Dr. Fleming and others to the turnips being drilled in; indeed, broadcast is generally considered inferior to drilling, and the system of ridging for the drill is recommended by most farmers. Cold and wet we know do not agree with the perfect insect, and such seasons may be still more pernicious to it in its earlier states, which may account for its rarity in Scotland, where I do not remember to have noticed it; and in parts of Forfarshire and in East Lothian the fly is said to be scarcely known. Mr. Bowie, however, of Arbroath, seems to be well acquainted with the effects of the fly, although he only remembered its attacking the plants once in rough leaf, and that was during the hot and dry summer of 1826. I see also that at Cramond, near Edinburgh, it is now abundant. No notice has been taken of it in Scotland, except on the eastern side, where it may be expected, as in the eastern counties of England, that the fly would be most fatal to the crops, as there is a much less fall of rain on that side than in the western and south-western quarters of the kingdom; we see, however, from the destruction recorded in Devonshire, that in a warm district, although subject to a great deal of wet, its progress is not always impeded.

It is the opinion of a great many agriculturists, that raw and long manure harbours the beetle, and and if turnips be sown on a stubble-crop, they are often completely destroyed. I see Mr. Webb Hall states that he has had to sow stubble-crops three times over, and seed sown on stubble late in August has been taken off by the beetle in more than one instance. Whether this arises from the hollow straws affording a retreat for the beetles, or that the weeds had supported them or the maggots, so that the chrysalides were lying undisturbed in the land, is not easily explained.

Mr. Linton and many others recommended drilling in not less than three or even four pounds of seed to the acre, and six or seven pounds broadcast; for he very justly observes that thick sowing causes the plants to grow much more rapidly when young than thin sowing; and by drilling in with the seed a peculiar compost, containing the strongest animal manures, the fly, he says, has never yet disappointed him of obtaining a good crop.* I think it probable that the ammonia in this potent manure may be disagreeable, if not destructive, to the insect; and the rapid growth of the plant, from its stimulating effects, defies their attacks. The vegetation of the seed may be accelerated by steeping it in water for twenty-four hours; and the surest way to obtain a strong crop is to sow seed of the same age, otherwise the plants do not come up simultaneously, and the fly will attack and destroy the crop in detail.

Mr. Linton also adds that he has found more benefit from the manure he describes in the succeeding crops of clover-seeds than from three or four chaldrons of lime to the acre. With regard to the use of lime, a great deal must depend upon the soil on which it is used, which may account for the conflicting opinions respecting its effects in protecting the turnips against the fly. From six to eight bushels of quicklime per acre may be sown over the young plants successfully in dry weather; but it must be repeated after rain or dew; and this, as well as soot, requires to be regularly and evenly dusted over the plants. Mr. Birk says that he used slaked lime with perfect success; and although profusely, it did not at all injure the plants. It should be slaked at the time of use, and ought to be spread in a very hot state, when it burns the fly. Some danger to the plant seems to attend this process, arising from the heat generated by the lime—at least, so I presume; but some little explanation is required in these statements to distinguish clearly between slaked and quick or unslaked lime. Very different were the results from Mr. Le Keux's experiments. Forty bushels of lime per acre were spread, he says, immediately before the seeds were sown, and did no good; and when the plants came up, and the fly was observed attacking them, lime-dust was thrown over them, so that many of the plants were quite white with a coat of it; after which as many flies were found upon those as upon any that were free, and they were eventually devoured. This is again quite at variance with the opinion, that repeated dustings of ashes and soot, when the plants are wet with dew, will keep off the fly, and prevent their feeding. In another place he states that the upper part of a field in a sheltered situation, with a south aspect, which has been sown with barley, was well dressed with lime, and sown early in May with whitestone turnips, which were destroyed as soon as they appeared above ground; the land was sown again, and harrowed, the surface being thickly strewed over with wood ashes; the plants were, however, devoured as rapidly as before.

The growth of the turnips being stunted by too frequent repetitions, they become fingery on light sandy soils, and are then more likely to fall a sacrifice to the fly. A good coat of clay or chalk has the effect in Norfolk and Suffolk of invigorating the land, and giving it the power of again producing good crops once in four years. The culture of mangold-wurtzel is well deserving the attention of the farmer, when the land gets tired of turnips; and it has the additional recommendation of not encouraging the increase of the turnip-beetles. As it is quite certain, I should say, that the beetles are attracted by scent, it appears to me likely that, if a field of turnips were planted round with a belt of mangold-wurtzel, the turnips might escape their attacks, if not entirely, to a very considerable extent; especially when the insects are believed to come from a distance; for at the early stage of the plants a few hours of respite may be of vital importance. The Swedish turnip, or *Ruta-bago,* whether it be a hybrid produced by the turnip and cabbage, or a distinct species, has not the strong scent at an advanced period which is so perceptible in the English turnip when in rough leaf; and if there be as marked a difference of smell in the seed-leaves, it would give the former a decided advantage in exposed situations, where the beetles are attracted from distant localities: being sown in May or June, however, is, I conceive, not a recommendation, as I believe that to be a period of the year when the first principal brood is generally at its maximum, as the second is in August or September; but the temperature of the seasons may in this respect make a variation of a fortnight or three weeks on either side of the average: however this may be, it is admitted on all sides that the beetle is weakest in July.

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* Journal of Royal Agri. Soc., vol. i. p. 452.

I fear, on the other hand, that no early sowing can insure the turnip-crop; for as the beetles hybernate, the same warmth and sunshine that make the seed vegetate will bring the swarms of beetles from their retreats; and it is worth considering whether by early sowing we do not entice a hungry horde from their winter quarters, or from the banks and meadows where they are at first supported; whereas by not sowing until Midsummer, the beetles may in the mean while be starved and drawn off to more favourable localities, or have fallen a sacrifice to small birds and the casualties of the wet and cold of our spring. Such seasons we know do not agree with the beetles; and I have observed that when the dew is upon the turnips in the autumn, they keep under the leaves, and appear to be asleep; and windy weather has a similar effect in rendering them quiescent. The crops being attacked and destroyed in the autumn, does not altogether militate against good success at Midsummer, especially in forward seasons. Similar objections to the above may be urged against sowing the white turnips with the Swedes; for if the quantity of beetles be small, the Swedes may be preserved in consequence of the turnip being their favourite food; but on the other hand multitudes may sometimes be thus attracted from a distance, which would not otherwise, it may be presumed, have detected the Swedes, from their scent being less perceptible.

It is now three years since I intimated that "some benefit might be derived from destroying those cruciferous plants, *Erysimum alliaria* and *Cardamine pratensis,** to which these *Alticæ* are so strongly attached, for they grow in abundance in every hedge and meadow: they appear long before the turnips come up, and attract and give support to the parents of the future swarms that are to sweep away the crops of the farmer."* As these plants often flower at the beginning of April, and produce their leaves at a much earlier period, it is almost certain that they nurse the fly, and are its great resources for food and nourishment in the earliest days of spring; but how to eradicate the *Cardamine* is for future consideration. The hedge-mustard, and other cruciferous plants on banks and road-sides, are quite under our controul; and it is a duty which we owe to our neighbour as well as to ourselves, to keep our fields and hedges clear of charlock and every allied weed of that family, all of which harbour the turnip-beetle.

Before dismissing this portion of the subject, two or three remarks will be useful. It is certain that manure gives strength to the turnip-plant, but it is doubtful if it will destroy the beetles. Hoeing and rolling may harass and kill many of them; and as this process promotes the more rapid growth of the plants, it must be attended with no slight advantages. I expect also that if it were performed in damp days, or after heavy dews, the benefit would be increased; for if the beetles leap in moist weather they often fall upon their backs, where they stick, and, after being exhausted, become torpid and apparently dead, if the air be cold; but they reanimate as they are dried by the sun. In cold and wet weather it might not prove less efficient; for multitudes of the flies are then sheltered under and about the clods, which being broken down, the insects must perish by the pressure; and if there were any chrysalides in the earth, they would in all probability suffer the same fate.

There are many who consider that turnips should be sown immediately after ploughing, and that much of the success attending a crop depends upon the diligence employed in getting in the manure and seed; whilst some maintain that the land should lie undisturbed for a fortnight before sowing. Such conflicting opinions, as far as the fly is concerned, may often be reconciled by the difference of the seasons when the observations were made.† We know that turnips must not be sown in too dry nor too wet a state of the soil, yet this is precisely the state most fitted for the production of the fly; for it is well ascertained that a moderate degree of moisture is necessary to bring forth or to hatch almost all insects, and if this be accompanied by a mild air, it is the better suited to them; it is therefore reasonable to expect that after a fine early spring the turnip-beetles will be found most abundant.

From the dislike the fly has to repeated wet, I have always thought that watering the turnips would be highly useful; and this opinion is supported by Mr. Bayldon, who recommends them to be watered every other day, four, five, and six times if necessary.‡ Irrigating the land would not have so good an effect, I think, as watering, because the beetles would only be floated off the leaves, if they were detached at all; and if they were left thus for two or three days, there would be a great chance of their recovering when the plants were left dry; whereas by the watering they would be forcibly brushed off, and get set fast in the earth and die. The benefit would be most felt, I conceive, on heavy lands, with regard to the annihilation of the beetles; but it would everywhere have the advantage of destroying the chrysalis, by stopping up the pores of the soil, and so preventing the exit of the fly.

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* Curtis's Brit. Ent., pls. 569 and 179, called sauce alone, or hedge-mustard, and common ladies'-smock.

* Ibid, folio 630.

† The perusal of the report in the Transactions of the Doncaster Agricultural Society is strongly recommended, and in their "Analysis of the Returns," the date of every year is alone wanting to make it invaluable.

‡ How is this to be done? In a garden it might

Nitrate of soda has been tried in two instances on crops of Swedish turnips with very beneficial effects; and it probably assists, from its peculiar qualities, in checking the increase of the beetles. The nitrate was sown two or three days after the seed; and it may be used on all soils excepting on chalk. It should be sown broad-cast, mixed with wood-ashes, which enable the sower to spread it more regularly.

We now come to what may be termed direct remedies.

The Paul-net, as it is called, after its inventor, although it has been considered as a toy, yet I am of opinion might be usefully employed; for I have seen a quart bottle filled with the little turnip-beetles that were all caught with this net. If I remember correctly, Mr. Paul's plan was to sow a small spot with white turnips early, as a decoy, and over that space to draw his net.* It always struck me that vast quantities made their escape by skipping out of the net, which was its greatest defect, but this might be remedied by placing some sawdust at the extremity of the bag, mixed with lumps of common ammonia, or sprinkled with spirits of turpentine, which perhaps would be better; but either of these would kill a great many, and stupify the remainder, until the contents of the net were subjected to sufficient heat to deprive them of life. This process is no doubt troublesome, and requires to be repeated; and unless, perhaps, some alterations were made, it would not answer on an extensive scale. This, however, is no fatal objection to the principle.

A board newly painted or tarred, and drawn over the turnips, will catch multitudes of the beetles; for on being disturbed they leap against it, and cannot release themselves. I should recommend white paint; and the brighter it is the better, as all insects are attracted by light colours. Neither wet nor windy weather would be suited to these operations; for it is ascertained that the beetles are at such seasons disinclined to move; neither would mid-day in fine weather do, as they are then active, and fly well; for it is a well-known fact, corroborated also by the flight of swallows, that in hot days and sunshine insects fligh high, whilst in damp weather they keep upon or near the ground.

Fumigation by burning stubble, weeds, &c., to windward of the field, so that the smoke drives along the ground, has proved effectual; but I should prefer burning to leeward as a preventive, for as the beetles are attracted by the scent of the turnips, and fly towards the wind, they would be baffled by such a manœuvre.

Watering the plants with brine sufficiently strong to affect the insects, but not strong enough to injure the young plants, would, I expect, prove a most successful remedy; and when in rough leaf it would also kill the larvæ, and even destroy the eggs that were exposed to its influence.

In Hanover, fields of white turnips have been preserved from the fly by thickly sprinkling the *dust of chalky roads* on the young plants at night, when a heavy dew is falling, until they appeared covered with the powder. The fly, it is said, will at once disappear, especially if the next day be a bright sunshine, and the dust is dried upon the leaves, which prevents their little teeth from gnawing the leaf, or disgusts them in some other way, and they depart to more agreeable quarters. If the sprinkling be immediately succeeded by heavy rains, so that the dust is washed off, the operation must be repeated. Several other means are suggested by M. Wundram, which have proved to be useless in this country; and his reasoning induces a belief that he is not well acquainted with the habits of the turnip-fly. An infusion of wormwood sprinkled over the young plants and seed-beds will, he says, secure them from the attacks of the flies, as they dislike the bitterness thus conveyed.

Drawing boughs of the elder over the field is supposed to annoy the beetles, and drive them away; and the leaves of the elder, when fresh gathered, being covered with a glutinous liquor, and those of the lime, &c., when the honey-dew is upon them, are recommended to be strewed in gardens for the purpose of catching the turnip-beetles.

I confess that I have no faith in the plants being rendered obnoxious to the fly from steeping the seeds in oil, brine, brimstone, or milk, as practised by many. Such immersions may render the plants stronger, or cause more of the seeds to vegetate, which will at once account for the success that is said to be derived from this process. If, indeed, the eggs of the insect were laid upon the seed, the oil and brine would be most efficacious; but that notion is exploded.

Mr. Le Keux says that washing over the plants with sulphate of potash had no effect; and he very justly observes, that if the upper surface of the leaf could be poisoned, the *beetles* might feed upon the under side with impunity. Powdered sulphur, strewed one-tenth of an inch thick, did not deter the flies from attacking the plants, but it improved their appearance. Snuff, assafœtida, a powder called *anti-tinea*, for preserving furs, proved equally powerless. They did retire from smelling salts (Carb. am.), and died immediately on being exposed to the effluvia from it; but a small bit placed an inch from the plant would destroy it also. This, or something that would overpower the scent of the turnips, might perhaps be advantageously employed in driving away or deceiving the fly. One ounce of tar, one ounce of olive oil, and two ounces of strong caustic potash, well mixed together, and shaken up with the requisite quantity of water, were next poured, the fourth day after sowing, over a patch on a hill swarming with the fly, at the end of August. Not many of the seeds came up, but the few plants from them were of a healthy colour, and acquired the rough

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probably have a good effect, but on a score of acres? If, indeed, a water-cart filled with brine could be conveniently once run over a field, it might, as there stated, prove a partial remedy, and it certainly is worth trying; for even should it not be effectual on that point, it would, no doubt, prove beneficial to the growth of the crop.—F. BURKE.

* A very good representation of this net will be seen in Kirby and Spence's Introduction to Entomology. pl. 24, fig. 3.

leaf, a few only on the windward side being punctured; but several days' rain occurred at the most critical time, which might be their best protection.

Such are the remedies proposed; but I fear it is not by the experiments of a few philosophic men that we can hope to discover any positive antidote to so great an evil. We want correct data from every sort of soil under the various influences of climate and effects of cultivation, before we can fairly grasp the subject. Until we become acquainted with the *economy* of the beetle, we were groping in the dark. That important discovery has brought us a few steps towards the light; and those who wish to follow in the path of truth should try and examine Mr. Le Keux's experiments, which it is easy to do, by filling a garden-pot with earth, carefully sifted to take out all worms, centipedes, or other living animals, which might destroy the chrysalides. When this is done, plant in it a small turnip, in rough leaf, having a fine wire-gauze guard, large enough to enclose the plant, and fitting just inside the top of the pot. One or more pairs of the beetles must be placed, with a fresh turnip leaf, in a large-mouthed transparent bottle, then tie over the end a piece of muslin to prevent the escape of the insects; for if the cork or stopper be put in, the bottle will become wet inside, which will prevent the females from laying any eggs. I imagine they will not adhere to the damp leaf. The leaf may be examined daily through a magnifying-glass, and as soon as any eggs are discovered, they may be placed in the pot where the turnip is growing, that the little maggots may be able to get at the living leaves as soon as they hatch. The progress of the insect may thus be traced through its different stages; and it will only be necessary to place the garden pot in a saucer, into which water should be daily poured, if necessary, to nourish and refresh the plant.

Let us not forget that amongst our best friends are the small birds, a great number of which, such as the grey and yellow wagtails, no doubt destroy incredible numbers of these insects in their various stages. Their nests ought to be protected, and the birds themselves defended from persecution.

There is another species of *Altica*, whose habits are similar to those of *Altica nemorum*, which materially assists in injuring the turnip crops. The habits of the brassy or tooth-legged turnip-beetle are not known, but may be expected to resemble those of the striped turnip-fly. I will now describe this insect, the *Altica concinna*, which is the same as the *Altica dentipes* of foreign authors.

It is more oval, convex, and shining than *Altica nemorum*, of a greenish-black colour, more or less tinged with a brassy or copper hue. The horns are only half as long as the body, and thickest towards the extremity, of a pitchy colour, with a few rust-coloured joints next the head: the trunk or thorax is thickly but very finely punctured: the wing-cases are scarcely twice as broad as the trunk, but three times as long, having ten lines of strongly-impressed dots down each. The wings are ample; the legs are black, the shanks or tibiæ are bright rust colour at the base; the hinder thighs are very stout; the intermediate and hinder shanks are armed outside with a short acute tooth, below the middle,* and fringed with hairs and toothed with spines; the feet are dusky, with four joints, similar to those of *A. nemorum*. Length from ¾ to 1 line.

It inhabits hedges, nettles, grass and turnip fields; and is abundant throughout England and the south of Scotland in the spring and summer.

I had nearly forgotten to remark that there is another little beetle of the same genus, far from uncommon upon the turnips, named *Altica obscurella*; but as I am ignorant of its economy, I refrain for the present from describing it.

In the investigation of this subject I have thought it necessary to consider every bearing that connects the beetle or fly with the turnip crop, that neither its habits nor any circumstance affecting its economy might be overlooked; but in treating of the other insects I shall not have such a variety of materials to digest, which will allow me to render their history more concise. I am now induced to recapitulate the leading features contained in the foregoing account, that they may be brought at one view before the reader.

There are at least two species of turnip-flies or beetles, the *striped* and the *brassy*.

The habits of the latter are not known.

The *eggs* of the former are laid upon the under side of the rough leaf, from April to September: they hatch in ten days.

The *maggots* live between the two skins or cuticles of the rough leaf, and arrive at maturity in sixteen days.

The *chrysalis* is buried just beneath the surface of the earth, where it remains about a fortnight.

The *beetles* live through the winter in a torpid state, and revive in the spring, when they destroy the two first leaves, called the cotyledons, or seed leaves.

There are five or six *broods* in a season.

These insects are most to be feared in fine seasons.

Heavy rains, cold springs, and long droughts, destroy them.

Their *scent* is very perfect: the beetles fly against the wind, and are attracted from a distance.

To extirpate them during the first three stages is apparently most difficult.

The beetles are sheltered in hedges, banks, under bark of trees, &c.

Their *parasites* have not yet been discovered.

First appearance of the beetles to be punctually observed, as affording the best chance in applying remedies.

Manure to render soil obnoxious to the insects scarcely to be expected.

Rapid growth of the plant the best security.

To secure which, *sow plenty of seed*, and of the same age.

Burning beneficial, by destroying the chrysalides.

Sheep-folding must destroy the insects in every state.

Deep-ploughing excellent when the chrysalides are in the soil.

Drilling far superior to broadcast, and believed in Scotland to keep away the beetles.

Dangerous to sow on a *stubble crop*; and *long raw manure* harbours the beetles.

Lime and soot—the benefit derived from them in this way very doubtful.

Mangold wurtzel not favourable to the beetles; and *Swedes* probably less attractive than white turnips.

Mixing white turnips with Swedes not desirable, as the beetles may be attracted by the strong scent of the former.

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* From this circumstance it has been recently named *Chætocnema concinna*.

Early sowing attended with disadvantages.

Destroy charlock, and all cruciferous weeds in fields and hedges, as they afford support to the beetles before the turnips come up.

Hoeing and rolling harass and destroy the beetles.

Watering the crops, especially with weak brine, beneficial.

Paul-net and *painted boards* useful in destroying the beetles.

Fumigation by burning stubble, &c., will keep off the beetles.

There are many other remedies proposed, some of which it might be well worth trying; and if we be defeated in our endeavours to vanquish this insect enemy, we must take the field again with fresh vigour until our efforts are crowned with success, and neither despair from disappointments nor rest in listless security from the apparent inertness of our foes. If we look back for one instant to experience, we shall find that after violent attacks of disease in the animal, or of blights in the vegetable kingdoms, they are generally succeeded by a respite of many years, which throws us so much off our guard, that when they return we are not prepared with any proper remedies, and not unfrequently they are altogether forgotten; thus, after a lengthened interval of tranquillity, when we think the hordes of hostile insects have departed for ever, they suddenly make their appearance, and take us by surprise and at advantage. The intelligent farmer must therefore be up and stirring, to detect the first breath of infection, and be instantly prepared with his remedy.

MEETINGS OF AGRICULTURAL SOCIETIES.

The meetings of Societies which take place at this season of the year are so numerous, and the proceedings so lengthy, as to render it impossible to give more than abridged reports of some of them, several of which will be found in the following pages.

MONMOUTH FARMERS' CLUB.

The Annual October Meeting of this club took place on Thursday, Oct. 18, the ploughing match being decided in a field at Wyesham.* There was a large attendance of members, most of the agricultural gentlemen of the neighbourhood being present. Several ladies and a great number of spectators, all of whom appeared to take a lively interest in the proceedings of the day. The choice of ground having been decided by lot, the competitors, to the number of thirteen, started about half-past nine o'clock, each plough having half an acre allotted. The following is a list of the names of the successful ploughmen, with the time taken by each in completing the task:—

Premiums for Ploughing, in the best and most workmanlike manner, Half an Acre of Land, within four hours, with a Pair of Horses, without a Driver:—

Class 1.—To the son of a farmer, being a member, living with his parent, the best ploughman 3*l*. Awarded to Thomas Keddle. Mr. Keddle owner of plough. Performed in 3 hours and 9 minutes.

The next best, 2*l*. Awarded to Henry Keddle. Mr. Keddle owner of plough. Performed in 3 hours and 6 minutes.

2.—To a labourer or servant of a member, the best ploughman, 3*l*. Awarded to James Williams. Mr. Wm. Ford owner of plough. Performed in 2 hours and 17 minutes.

The next best, 2*l*. Awarded to Philip Vaughan. Mr. H. Pride owner of plough. Performed in 2 hours and 53 minutes.

3.—To the ploughman, being the son, or servant, or labourer of a member, under eighteen years of age, the best ploughman, 2*l*. Awarded to Thomas Arundell. Mr. J. W. Smith owner of plough. Performed in 3 hours and 16 minutes.

4.—The best ploughman in the county of Monmouth, or within 20 miles of the town of Monmouth, in the counties of Hereford or Gloucester, 5*l*. Awarded to Wm. Williams. Mr. George Allen owner of plough. Performed in 3 hours and 2 minutes.

The next best, 2*l*. Awarded to Thos. Davies. Thos. Davies owner of plough. Performed in 3 hours and 20 minutes.

5.—Premium to the ploughman or workman, living with a member, for ploughing, in the best and most workmanlike manner, half an acre of land, within four hours, with not exceeding three horses at length, 2*l*. Awarded to George Griffiths. Mr. Yeomans owner of plough. Performed in 2 hours and 54 minutes.

The next best, 1*l*. Awarded to Thos. Vedmore. Mr. E. Jones owner of plough. Performed in 2 hours and 51 minutes.

Four others started, and were awarded 10s. each.

9. Servitude.—The two male farm servants, or labourers, of good character, who shall have lived in the same family, or upon the same farm, the greatest number of years consecutively, not less than five years. The first prize, 2*l*., to John Tye, 28 years in the service of Mr. John Garsed.

The second ditto, 1*l*., to Wm. Jones, 16 years in the service of Mr. J. D. Howell.

10.—The female servant of good character, who shall have lived in the same family, or upon the same farm, the greatest number of years consecutively, not less than five years. The first prize, 2*l*., to Maria Lewis, 6½ years in the service of Mr. Wm. Williams.

11.—To the shepherd, or other person, being the servant or workman of a member, who shall have weaned and have alive on the 1st of July, 1841, the greatest number of lambs in proportion to the ewes put to the ram, not being less than 100 ewes, a prize of 2*l*.; to John Tye, shepherd to Mr. J. Garsed, rearing 183 lambs from 180 ewes.

15.—The occupant, of good character, being the proprietor of the neatest and cleanest cottage, and best cultivated garden, being rated at a sum not exceeding 5*l*. gross value, a prize of 2*l*., to Philip Williams, of Llandogo.

THE DINNER.

Shortly after three o'clock upwards of seventy gentlemen sat down to an excellent dinner at the Beaufort Arms, provided by Mr. Whiting in his usual style, John Rolls, Esq., in the chair; and among the company we noticed most of the leading agricultural gentlemen of the neighbourhood, and several of the most respectable tradesmen of the town. The cloth having been removed, and grace said by the Rev. R. Jackson,

The Chairman proposed "The Queen," with three-times-three, which was drank with enthusiasm.

The Chairman then gave "The Queen Dowager" (*cheers*), "Prince Albert and the rest of the Royal Family" (*cheers*), which was followed by the "Army and Navy" (*cheers*), and "The Lord-Lieutenant of the County." (*Cheers.*)

Mr. Purchas, the Honorary Secretary of the Farmers' Club, then read the report and the list of prizes which had been awarded by the judges.

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* The field, a clover ley—soil, sandy loam—furrow, 6 to 9 inches—the greatest draught of any plough was 3 cwt., least 2½ cwt.

Mr. Purchas gave "Success to the Farmers' Club."

The Chairman proposed "The Members for the County and Borough."

Mr. Clifford would propose a toast, which he was sure would be received with the greatest enthusiasm by the gentlemen present—the health of a gentleman who was a sincere friend to agriculture, and much attached to the interests of the farmers of his county—he alluded to Mr. Rolls, who had proved his attachment (if any proof was necessary) to the cause by his presence in the chair that day. He concluded by giving them "John Rolls, Esq." *(Three-times-three and cheering, which lasted for some time.)*

Mr. Rolls acknowledged the toast in appropriate terms, and regretted he should be obliged to leave at an early hour. He sincerely hoped the Club would prosper, and they might rely on his always using his best exertions for its interest.

The Chairman proposed the health of "Mr. Purchas," without whose assistance the Club never would have been formed. *(Three-times-three and great cheering.)*

Mr. Purchas returned thanks, and said they might at any time command his services. He then alluded to the subject of liquid manure, and begged to refer the agricultural gentlemen present to an excellent article in the *Mark Lane Express* of the 27th ult. In conclusion, he begged to propose "His Grace the Duke of Beaufort and the liberal landowners who had come forward with their donations in favour of the Farmers' Club."

Mr. Rolls acknowledged the toast on behalf of himself and those gentlemen.

The Chairman would give them "The healths of those gentlemen who had brought teams to the match, and 'Speed the Plough.'" *(Nine-times-nine.)*

Mr. Yeomans and Mr. Charles Keddle acknowledged the compliment, and announced their intention of competing another year.

J. Rolls, Esq., then left the chair, which was taken by T. Gratrex, Esq.

Mr. Purchas then gave "The Judges of the day"—Mr. R. Jones, Mr. J. Brown (of Whitchurch), and Mr. Matthews (of Higga)—who had given universal satisfaction in their awards, which was drank with three-times-three.

Mr. Brown returned thanks.

The Chairman proposed "The Committee," and bore ample testimony to the excellent arrangements made by those gentlemen. *(Three-times-three.)*

Mr. H. Williams returned thanks for himself and colleagues, and would strive for the future to merit their approbation.

The successful candidates in Class I. were here introduced, and presented with their prizes by the Chairman, who addressed them shortly, and concluded by proposing as a toast "The Successful Candidates," and hoped they would become competitors another year, which was acknowledged by Mr. Keddle, jun.

Song—Mr. Taylor.

The Chairman then proposed "The Monmouthshire Hunt."

Mr. J. G. George, in returning thanks, said the members of the Hunt were anxious for the prosperity of agriculture, as the farmers were their best friends; and nothing gave the members of the Hunt more pleasure than to see the farmers present in the field, and he hoped to see many of them join in the sport during the next season, mounted on good horses. He was quite sure it was the desire of their worthy master, Captain Stretton, to do as little injury as possible in crossing the land, and he believed there was no farmer over whose land he hunted who was not happy to see him again. He congratulated the Farmers' Club on the great success of their first meeting; he expected when he went into the field appointed for the ploughing match to see but a small number of spectators, and he was quite astonished to behold such a large number collected, and he was much pleased to find that all classes seemed to take an interest in the day's proceedings. He was much gratified in seeing a great many farm-servants looking on, and he trusted next year that they would be induced to enter themselves as competitors; and he would beg to recommend the landlords and tenants in supporting so laudable an undertaking. He then alluded to the bad state in which a great portion of the Monmouthshire land was at present, which he believed might be considerably improved by draining, and he was always willing to assist his tenants by allowing two-thirds of the expense of draining his land; he wished landlords generally would give their attention to this subject, and then he had no doubt that a great portion of the Monmouthshire land could be brought into as good a state of cultivation as the land in the adjoining counties, and by that means men of capital would be induced to settle in it. He concluded by apologising for detaining them so long, and begged to thank them, in the name of the Monmouthshire Hunt, for the kind manner in which they had received the toast.

Mr. Purchas gave "The Agricultural Labourers of the country," which was drunk with enthusiasm.

Mr. George proposed the health of the worthy host, Mr. Whiting, coupled with that of the hostess. He considered the club much indebted to Mr. Whiting, who had given them the use of his field that day, in addition to a meeting-room for the club during the last year.

Mr. Whiting acknowledged the toast, and said it should ever be his study to merit their good opinions, and he would, on all occasions, do everything in his power to benefit the club.

Mr. Gratrex gave "Success to the trade of Monmouth," which was acknowledged by Mr. Morgan and Mr. Burton.

Mr. Purchas gave "The Royal Agricultural Society of England."

Song—Mr. George.

Mr. Gratrex gave "The health of Sir C. Morgan," whom he called the patron of agriculture in this county, and the father of the farmer, which was drunk with musical honours.

Mr. Gratrex proposed "The Press," which had been the means of diffusing benefits to agriculture.

Mr. Farror acknowledged the toast in appropriate terms.

"The Tredegar Agricultural Society."

"The Unsuccessful Candidates."

"The Farmers' Wives."

Mr Gratrex was obliged to leave early, and at the request of the company, Mr. J. G. George succeeded him in the chair, and, amongst other toasts, gave the health of Mr. Parsons, who during the past year had kindly undertaken the office of librarian, and, as knowledge is power, upon the proper diffusion of the knowledge to be derived from their library, depended much the success of the Club, and he believed Mr. Parsons had well fulfilled the duties of his office. *(Cheers.)*

Mr. Parsons returned thanks, and expressed his great desire that the Club should succeed; and as he was one of the first promoters, he would continue to render it every support in his power.

The healths of Mr. Robert Jones, Mr. Paul Morgan, Mr. Yeomans, Mr. Price, and other eminent agriculturists, were afterwards given, and received the applause they so well merited; and the members separated about nine o'clock, the worthy Secretary proposing "Success to our next merry meeting," which was heartily responded to.

The following gentlemen were elected officers for the next year:—Mr. Robert Jones, Troy, Chairman. Committee: Mr. Cullern, Mr. Paul Morgan, Mr. H. Pride, Mr. Yarworth, Mr. Brown (Lewston), Mr. Yeomans, Mr. Henry Williams, Mr. Parsons. Banker: T. Gratrex, Esq. Librarian, Mr. Farror. Hon. Sec.: Mr. R. W. Purchas.

Days of Meeting for 1841-2.—November 20, December 11, January 15, February 12, March 12, April 9, May 7, June 4, July and August no meeting, September 3, October 1, for auditing accounts and receiving claims, &c., and October 13 annual meeting.

MAIDSTONE FARMERS' CLUB.

At the monthly meeting of this useful society, held on the 29th July, C. G. Whittaker, Esq., the President, in the chair, the subject discussed was the best mode of cutting corn.

Mr. Leney introduced the subject for the evening's discussion, and stated that as success in agriculture could only be secured by minute savings, he thought that even the saving of a few shillings per acre was a matter of importance. He thought that the best mode of cutting corn was that of mowing, as by that means he found that he gained one-fourth more straw than by reaping. Supposing the saving to amount to half a load per acre, and that half load to be worth sixteen shillings, surely that was a saving worth attending to. It might be objected that the mowed shocks would not stand so well as the reaped shocks, but to balance this he had often found that reaped wheat would sometimes grow when mowed wheat would not do so. It might also be said that mowed wheat would take up rather more room in the barn and the stack; he did not, however, attach much importance to this objection. The mowed wheat would probably cost one shilling per quarter for threshing, more than the reaped wheat; and some persons advocated reaping the wheat and mowing the stubble afterwards. The stubble, mowing would, however, cost five shillings per acre, and would not then be near so valuable as if cut with the straw. He estimated the saving of mowing over reaping to be at least ten or twelve shillings per acre, which must be considered a very great saving. It might also be objected, however, that mowing would cut the weeds. He would answer that they ought not to have weeds to cut; but if they had, then it was better to carry them into the yard to be destroyed by fermentation, than to leave them to seed in the field. He had heard it said that mowing would knock out the corn more than reaping, but he did not think that the corn was more knocked out by the scythe than the sickle. With respect to spring corn, it might be doubted whether it was best to bind it or to carry it loose. He thought it best to bind it just before being carried, as he calculated on the expence being compensated for by the greater facility with which it could be got together than when loose. He did not think it best to bind oats or barley as they were cut, because, in the event of wet weather, it was sometimes necessary to open them again.—*(Cheers).*

Mr. Hatch said that he had had some little experience in cutting corn. Formerly he had reaped all, and condemned mowing altogether; but having had a contract for supplying straw for dung, he was first induced to mow some wheat in a wet harvest, and found that instead of his wheat being, as he expected, injured by it, he had been able to carry the mowed wheat, whilst the reaped wheat was sprouting. He knew of only two objections to mowing; the first was a foul stubble, which a farmer ought never to have, and the other was that the stubble afforded no cover for the sportsman's birds.—*(A laugh).* He believed that the increase of straw much more than compensated for any increase in the expence of thrashing. His mode was by the Kentish corn scythe. He had heard much about the Hainault scythe, but he did not think that it was better than the Kentish scythe. All his bands for binding were made from straw, none of them being made in the busy time of harvest.

Mr. Spencer.—Do you not find mowing shatter the grain very much?

Mr. Hatch.—I find that it is about the same in reaping or mowing.

Mr. Spencer.—Suppose you get a crop laid.

Mr. Hatch.—I think that even then the crop would stand a better chance against the weather. In reply to Mr. Leney, Mr. Hatch also said that he was an advocate for cutting corn in rather a raw state, as he felt satisfied that much was lost every year by its being whipped by the wind. He had paid twelve shillings per acre for reaping, and he paid ten shillings for mowing.

Mr. Leney said that he generally paid the same for mowing as for reaping, and paid one shilling per quarter more for thrashing.

Mr. Hatch said that he believed bagging to be better than mowing, only it was difficult to get men to do it.

Mr. Boucher inquired whether in bagging, much dirt was not got into the samples?

Mr. Barnes said that it depended on the management.

Mr. White read from the Journal of the Agricultural Society, of which he is a member, the letter of Mr. Rodwell's bailiff on the comparative advantages of reaping and mowing. In this case one party of twenty men reaped part of a crop of Talavera wheat, and mowed the remainder, whilst another party of twenty reaped some Golden Drop. The season was uncertain, but the mowed Talavera was ready to carry two days before that which had been reaped, although the reaped had last two days of fine weather. The mown wheat and sample were in excellent order, whilst many mouldy sheaves and sprouted kernels were found amongst the reaped wheat.

Mr. Whiting read from "British Husbandry," an account of the advantages of the Hainault scythe.

The Chairman then read a letter from Mr. Stunt, in which that eminent agriculturist, after enumerating the advantages and disadvantages of the different modes of cutting, declared his opinion to be in favour of bagging.

Mr. Hatch said that he agreed with Mr. Stunt that bagging was preferable, but as the hop-culture of Kent employed a great number of labourers who could mow, but were not expert in bagging, and as farmers were much less dependent on strangers, in Mid Kent it was difficult to get bagging done.

Mr. White expressed his desire to hear the opinions of Mr. Barnes on the subject. He (Mr. W.) had last year had the pleasure of seeing the mode of bagging practised by him, and would say that it was certainly superior to any work of the sort he had seen.

Mr. Barnes said that he had practised all the modes mentioned by Mr. Stunt, and thought bagging superior to them all. In 1816–17 he used to reap all, mowing being not much used where he lived in Sussex, but when he went to live in Romney Marsh, he found mowing was the general custom there, and he fell in with it. The cause for mowing there was the heavy crops of straw grown on the old pastures when broken up, and which were always laid. He had there seen crops so grown that the wheat shot up as thickly as ever he had seen oats in these parts. They used to mow the crops with the naked scythe in the direction in which they were laid, and paid a very considerable amount for mowing. The highest he had ever paid was forty shillings. The straw there was all sold, none of it being used except for thatching and horse-litter. He had found that he had got one-third more straw by bagging and mowing than by reaping. In the case in which he had given forty shillings, the wheat had been laid very early. The value of the straw was considerable, and if he had had it reaped, would have made a difference of 3*l.* 6s. 8d. per acre. The piece produced something more than 200 trusses per acre, at 1s. per truss. The wheat produced was not more than three sacks per acre. He merely mentioned this case to show the immense difference in such cases between mowing and reaping. The advantage of mowing depended very much on the soil. Although he knew it was not the general opinion, yet he believed that the sorts of wheat which sprouted most quickly were those which had the greatest chaff. If the Talavera wheat, for instance, were cut, very little rain would make it grow, and the closer it was bound, the quicker it would sprout. What was generally called good binding was in his opinion the worst binding; as to withstand wet, and improve by good weather, the sheaf ought to be small, and the straw crossed so as to make the top and the bottom much larger than the middle, which in the long straw of bagged or mowed wheat need not be bound very tightly. When bound in this way, it would stand much longer without sprouting than when bound in any other. When he had come to live in Kent fifteen years ago, there was not a man where he lived understood bagging. He had been forced to teach them himself, and since that time he had had it done well, and had not the slightest trouble. The straw of bagged wheat would he believed, sell for 1s. a load more than that of reaped wheat; it was so much stronger and better in quality than reaped straw. He thought that ninepence per quarter more than for reaped wheat was a fair compensation for thrashing. He last year had his oats bagged and tied in very small sheaves, for which he paid 8s. 6d. per acre, and believed that he got them up with less waste by so doing. He paid the same price for bagging beans. After some further remarks Mr. Barnes concluded amidst cheers.

Mr. Cork (of Appledore) thought reaped wheat, from the cleanness of the sample, worth 2s. per qr. more than wheat bagged or mowed.

After some further conversation Mr. Barnes proposed and Mr. Hatch seconded the following resolution:—"That if the object is to sell the straw, bagging is the most preferable mode of cutting wheat, if hands can be got;—if not, mowing,—in either case the sheaves should be made small to prevent injury from wet."

Mr. Leney said that he thought whether the object was that of selling straw or turning it into dung the case was the same. He would not, however, propose an amendment.

The resolution was then carried.

PRESTON AGRICULTURAL SOCIETY.

The members of this society held their annual meeting on Saturday, Oct. 9, on which day the weather was the most propitious for the occasion that could have been possibly desired. The judges of stock were Mr. Blackmore, Mr. Rhodes, and Mr. Hunt, and by paying a most deliberate attention to the performance of the onerous duties imposed upon them, they were enabled to give very general satisfaction by their decisions. After the show was concluded, a party of members, to the number of between sixty and seventy, dined together at the Bull Hotel, Thomas Robert Wilson ffrance, Esq., in the chair, and among other gentlemen present were Col. Rawstorne, G. Jacson, Esq., J. N. ffarington, Esq., T. B. Addison, Esq., R. R. Rothwell, Esq., Rev. C. E. Kendal, Rev. Gardnor Baldwin, Rev. — Battersby, (Lathom), R. Snell, Esq., Mr. Fair, Mr. Birket, Mr. Kemp, Mr. Miller, Mr. J. Smith, Mr. Macdonald, Mr. H. Unsworth, Mr. Almond, Mr. R. Parke, Mr. Morrell, Mr. J. Gillow, Mr. R. Walker, Mr. Bannerman, Mr. Blackmore, Mr. Hunt, Mr. Rhodes, Mr. R. Threlfall, Mr. J. Fletcher, &c., &c.

The usual loyal and complimentary toasts were given.

The Chairman, in proposing "The Preston Agricultural Society," said, he was glad to find, from the secretary's account, that the judges were satisfied with the improvements which the society was now making by the judicious systems adopted in cropping and draining. With respect to the great agricultural stake in the country, in produce and land, he would be allowed to refer to a paper of Mr. Pusey's, published by that gentleman in the proceedings of the Royal English Agricultural Society, which proceedings, he much regretted to say, were not so widely diffused among the agricultural body as the great amount of information they contained entitled them to be. He then read some extracts from the paper, from which it was made to appear that the agricultural produce of England and Ireland, including wheat, oats, beans, and grass, amounted to more than the enormous sum of 108,000,000*l.* a year, viz., wheat 31,000,000*l.*, oats and beans 17,500,000*l.*, grass land 59,900,000*l.* Great, however, as this gross production appeared, he was fully convinced of the capability of the land largely to increase it. The present average production was something near twenty-six bushels the statute acre, and if the whole of the arable land might be made, by an improved system of cultivation, to yield only one bushel more per acre, a thing easily practicable, there would be an addition made to agricultural capital equal to twenty-four millions. It might then be asked, how were they to arrive at so improved a state of agriculture? To which he would answer, by the adoption of a more judicious system of education for those persons who were intended for agricultural pursuits. In the county of Lancaster the arts and sciences had advanced in a most astonishingly rapid manner, whilst, during the same period, agriculture had progressed at a mere walking pace, which, as he had before said, he ascribed to the want of a better system of education by the agricultural class. If a person were intended to follow a certain trade or profession, he had to serve an apprenticeship to prepare himself for so doing; nay, he did more, he made his studies at school subserve to the same object, and so became prepared to acquire the greatest proficiency in the particular pursuits to which his future time and attention were to be directed. And this should be the plan as regarded agriculture, which was formerly considered a mere life of toil; it was now, however, raised to the rank of a science, and it was well entitled to the distinction, for there could be no high degree of proficiency attained in it, unless the student and practitioner shall have made himself acquainted with geology, botany, chemistry, and geometry. He might say of agricultural societies, that they upheld, but did not teach agriculture, and a knowledge of it ought to be taught to the sons of tenants and labourers, and to landlords' sons also. He then briefly alluded to the fact of there being more agricultural societies in Lancashire than in any other county, and afterwards strongly recommended the establishment of agricultural schools, at which young persons might be enabled to acquire all necessary theoretical and practical knowledge, and afterwards to diffuse that knowledge throughout the neighbourhood in which it might be their future lot to reside. He next observed, that farmers could not be expected, on a seven or nine years' lease, to carry on improvements and make the outlays to which he had referred; it would be unreasonable to expect this from them. Now he was most wishful to avoid giving offence to any man, but he must be allowed to say, that landlords would not appear to him to be justified in granting leases of twenty-one years to the present race of farmers. To young men, however, who had been instructed in the manner which he had described, he was sure the landlords would feel no hesitation that this extent of the duration of the leases be granted. If they looked to the south of England, they there saw the farmers well educated men; if to the north, in Scotland, they were among the most intelligent classes of the people. And this knowledge was not only beneficial to themselves, for their landlords and the country in general shared largely in the advantages which it diffused. He would repeat, that he had no desire to give offence by the observations he had made, but he felt it his duty to speak out plainly in the way he had done. He was not ashamed to say, that he himself had laboured under great disadvantages from not having received those instructions, the necessity for obtaining which he was so anxious to press on all who heard him. It must never be forgotten, that all classes must pull one way, if they wished to promote the greatness and prosperity of the country; the interest of one class cannot be neglected without that neglect being shared by all the other parts of the community.

The SECRETARY then read the award of premiums.

Col. RAWSTORNE rose, and said, he thought he could not better follow up the observations they had heard from the chairman than by proposing his health. They were all aware how much good Mr. Wilson ffrance had effected by the improvements which he had introduced in moss husbandry, and he begged to say that he concurred in all the remarks which that gentleman had made. On the disadvantages experienced by a want of attention to the subject of draining, to which Mr. ffrance so much attended, he might state he had seen instances, in wet seasons, when the potato crop was almost under water, and he was sure that the succeeding crop would be greatly deteriorated thereby, although the bad effects might not have been experienced by the present one. Although, therefore, great improvements had been already effected in this branch of agriculture, there was still much room for the assistance which farming societies were able to render, especially in Lancashire, which was very far behind the other parts of the kingdom. He remembered, some years ago, seeing a survey and valuation of the country, from which it was made to appear that the three best cultivated counties were Northumberland, Leicester and Norfolk, and that if all the others were brought to a like state of perfection, there would be at least one-third more produce obtained. Mr. Pusey, to whose statements reference had been before made, had said that sixteen windles had been grown on one large acre (eight yards to the rood); that, however, must be regarded as a maximum and not an average, for he judged the average would not exceed ten or twelve, but if the greater number could be obtained in other parts of the kingdom, they ought to endeavour to make such improvements as would enable them to participate in such an advantage. And when it was remembered that a wheat crop involved two years' rent, and the cost of seed and labour, he thought that the produce generally obtained was by no means an adequate return for the expense of its production. In Scotland the land was superior to their own, but the climate was much inferior, and yet, by the skilful management there adopted, they might see whole tracts of land like a nursery garden, being so clean and perfect in the cultivation as to excite astonishment in looking at it. This superiority was clearly not to be ascribed to natural causes, but must be set down to the force of education having taken deep root in the minds of the cultivators, and afterwards seeing the benefits consequent on the application of their skill and industry. The gallant colonel then concluded by throwing out a suggestion of the desirableness of distributing premiums in books on agriculture and improved farm implements, and then proposed the health of "Mr. Wilson ffrance," which was drank with loud cheers.

The CHAIRMAN acknowledged his thanks for the kind manner in which his health had been drank, and then proceeded to say, it was quite true that he had turned his attention to draining, to moss lands in particular, and in all probability to his own personal loss; however, he believed the country had been benefitted by his experiments, and under that impression he felt himself amply rewarded. *(Cheers.)* He had before alluded to the establishment of agricultural schools, an undertaking for which some persons might think the time was not arrived; but as they had been formed in other parts, he saw no reason why they should not have one for the Hundred of Amounderness. He then briefly alluded to the powers possessed by trustees of endowed schools, and the willingness of the Court of Chancery to sanction such changes in the plans of instruction to be adopted in them, as were justified by the altered times and circumstances of the age in which we live; and he felt sure, if such powers were exercised, village schools might be made much more effectual in securing suitable education for farmers' and labourers' sons. There was another subject on which he would say a few words, it was relating to prices. It might be all very well to obtain twelve windles from the acre, but he was decidedly unfriendly to high prices: reasonable prices were most to be desired, and they would be obtained by better farming, which would be secured by skill and industry, and those excellent qualifications would not fail to be acquired by education. He trusted he should be excused for endeavouring to win the attention of all present to the benefits to be derived from education; for as he felt the subject a most important one, he should not have excused himself had he omitted to press it upon the very serious consideration of the meeting. *(Cheers.)* He again cordially thanked them for their kindness, and begged to drink all their good healths.

The CHAIRMAN next rose, and proposed "The Judges of Stock."

Mr. BLACKMORE returned thanks for himself and his colleagues, Mr. Rhodes and Mr. Hunt.

The prizes for last year were now distributed.

The CHAIRMAN begged to propose "The Vice-Presidents—Lord Stanley, Mr. Jacson, and Mr. Townley Parker." *(Cheers.)*

Mr, JACSON said, that as he was the only one of the three vice-presidents that was present, he begged to return thanks for himself and colleagues. He spoke very favourably of the roots exhibited at the show ground, and said he would conclude by proposing the health of Mr. Bannerman, the gentleman who had introduced so valuable an assortment of seeds into this neighbourhood. On this subject he could speak experimentally. The oat seed he got from him had given a superiority over his neighbours, by the crop being ripe ten days or a fortnight earlier. The turnip seed was also very good; the bulbs were not extraordinarily large, but they possessed the great advantage of containing a larger quantity of the saccharine juice, and consequently would furnish more nutriment to the animals fed upon them. His clover seed, likewise, deserved the same warm commendation. He would earnestly impress on gentlemen the great advantage of changing seed, not merely from one field on their own estates to another, but from a different part of the kingdom. He then proposed "Mr. Bannerman's health, with thanks for his seeds, and also for the interest he has taken in the welfare of the Society." The toast was drunk and responded to by the company with the warmest cordiality.

Mr. BANNERMAN briefly returned thanks, and assured the meeting that so long as his services could be made instrumental in promoting the prosperity of the Society, the welfare of which he had sincerely at heart, they should be most cheerfully given. *(Cheers.)*

Mr. R. R. ROTHWELL said, he would offer a few remarks which had occurred to him during the little time that he had paid attention to agriculture. He had attended meetings of this nature for about three or four years. At this period of the year he took the opportunity of going through the country, to make himself acquainted with the state of farming. Draining was, he thought, the first improvement that should be made. In the north of England, and likewise in Scotland, they had carried farming much further than in these parts, and the way in which they had done it, was by adopting a good system of draining, and then following it up by a good system of cropping. Of course it would naturally be asked what was the best way of effecting this mode of draining. He thought the best way would be for the landlords to effect the improvement, and to charge the tenants five per cent. for it. He admired that mode on account of its simplicity, as the landlord had nothing more to do than advancing the money, and showing what had been laid out. If the landlord charged five per cent., the tenant, he was sure, would derive at least six or seven per cent. advantage, and consequently he would pocket the difference. He thought it was bad to lay the drains too much upon the surface, or to cut them in a wrong direction, or not to lay them on a sufficiently firm foundation, or not sufficiently wide. All of these were very great defects. With regard to the prizes, he thought it preferable that they should be agricultural implements, instead of plate. He understood that practice had been adopted at Lytham. He thought it was one that should be encouraged, and that the prizes should consist of implements combining the newest and most effective improvements which had been made in those articles. He would propose "The health of the unsuccessful candidates."

The CHAIRMAN then said, that he had another toast to propose, which he was sure would be favourably received. It was "The health of Messrs. Fisher and Walker, the inspectors of crops," to whom they were under great obligations for the satisfactory manner in which they had performed their arduous duties.

Mr. WALKER rose to return thanks for himself and his colleague, for the kind manner their healths had been proposed and drank. He could assure the chairman and the company, that the utmost care and attention had been paid by himself and Mr. Fisher in awarding the premiums in a proper manner. He begged to say, that in one instance an excellent crop of Swedish turnips, Mr. John Butler's, of Poulton, were obliged to be passed over, on account of the rules requiring them to farm sixty statute acres; also a crop of drill beans, on account of their being nearer in the drills than the society's instructions allowed. He stated the necessity they saw of further extension of draining at narrow intervals on the wet land farms, and he begged the attention of landowners and tenants to this matter; he likewise dwelt on the great importance of attending to laying down land in a proper manner, as nothing tended to improve estates more than this—to do the work well and let it remain, and so proceed annually until they had raised it in a scale of farming—without which it was impossible to proceed with profit and character. Mr. W. then craved their kind attention whilst he read a few remarks which had occurred to them during the inspection.

INSPECTORS' REPORT.

The Inspectors beg leave to lay before the meeting a few remarks on the premiums, which the committee have entrusted us to award. Of the premiums (eight in number), the competition for six of them has been very respectable. Common turnips, and soil for keeping their cattle on green food during the summer—those two have had no competitors. We especially call the attention of the farmers to those two premiums—the common turnip, on account of its allowing time to make the land in higher cultivation, which the workings up to midsummer must necessarily allow, and which high cultivation is one of the chief aims in turnips and turnip growing. We therefore recommend, where the land is coarse and weedy, that they forego the Swede, and sow with the common at midsummer; not that we are insensible to the superior nutriment the Swede affords, and the better feed in the spring, but seeing better crops of corn and grass seeds follow the common, and for reasons before stated, we recommend a further extension of their growth.

The keeping of cattle on green food in the summer, has for its object the making considerably more manure of good quality, and without which no high degree of farming can be obtained. On the premium farm the green crop system seems to be well attended to—very considerable amount of draining and tillages—marling on the light soils—an extensive and well managed dairy. We highly approve the leaving his ample amount of green crops, where turnips, potatoes, &c., had grown, to be sown with corn and grass seeds in the spring, instead of wheat in the autumn. His clovers and corn on those are highly luxuriant, and the system seems to answer considerably better on the heavy soils. In addition to these he has paid attention to his fences in a handsome manner—the laying of his land for seeds; and on the whole, we consider him entitled to the premium for the best cultivation. The laying down land to permanent meadow and pasture claim the attention of farmers and landowners in a most especial manner. We recommend that it be done after a green crop, and fallowed in the spring for corn and grass seeds; or an early summer fallow, and sown with grass seeds, without any crop of corn; and the application of a liberal supply of manure, or admixture of composition, if the land be worn or under weak tillage. The competition for draining we find considerably over any former year; the sods, the turf wedge, the tile, and stone have all been used. We need not, we are sure, reiterate the necessity and further extension of it in the greatest part of the district; and we not only wish to see it extended, but also that it be done effectually, and at narrow intervals. It may not be our province to say anything about the proportion of expense due to proprietor and farmer in effecting this desirable outlay; but we certainly recommend a liberal advance on the part of the proprietors, after a well weighed situation of the farmers on wet lands, for the last three or four seasons. We cannot dismiss the subject without stating our opinion, that in no shape can the same amount of money be employed that will so essentially benefit the land as effectually draining where it is required. We therefore hope to see its extension with a view to improvement, and also to satisfying the demand for labour, which the ensuing winter is likely to bring along with it. The premium stock of cattle which we had to view upon the farms, consisted of an extensive, young, and well bred milking stock; a good succession of young ones in their different ages; and a suitable stock of farm horses, sheep, and pigs. On the whole, the stock, and the further improvement which the colts and young cattle promise when they come to maturity, entitle him to the premium. We see very ample steps to improvement, under most of the premiums; and should seasons have been as heretofore, the green crops and grass seeds would, we presume, have been shown to us in a very superior manner.

The meeting continued only a short time longer, together, and then separated, all being well pleased in having taken part in the day's proceedings.

VERYAN FARMERS' CLUB.—On Tuesday, the 12th of October, an excellent lecture was read to the members of the Veryan Farmers' Club, by J. Gwatkin, Esq., on "the condition of the Agricultural Labourer;" after which a vote of thanks was unanimously given to Mr. Gwatkin, and on being requested to publish his lecture in the Cornish newspapers, he consented to do so.

THE HIGHLAND SOCIETY'S AGRICULTURAL SHOW.

BERWICK, Sept. 29.

The actual business of the show commenced this day, under most inauspicious circumstances, so far as the weather was concerned. From an early hour in the morning, the rain fell in torrents, accompanied by a strong westerly wind, and neither abated until the day had far advanced.

The show ground for cattle, implements, &c., was in a field on the north side of the town, called the Pier Field; the part selected, a flat piece of ground to the extent of 4¾ acres, enclosed by paling 10 feet high, and judiciously arranged in the interior for the reception of cattle, &c. A large shed for the exhibition of roots and seeds, was also fitted up in the middle of the ground, and in which a great portion of the valuable collection of seeds and plants belonging to Messrs. Hogg and Wood, of Coldstream, and Mr. Lawson, of Edinburgh, had been placed, was blown down during the night of Tuesday, by which the latter gentleman suffered most severely, and in consequence of this serious disaster, the show of implements, of husbandry, seeds and roots, was deferred. On the east side of the show ground, a spacious gallery was erected for the ladies, in front of which was a bridge over which passed the cattle. The number and quality of the implements fell far short of what was anticipated, and we believe what was really expected by the managing committee, the total number of every description being forty-two, amongst which may be mentioned an Oil cake Crusher of considerable merit, from Hanercroft and Dale, Kirmington, Lincolnshire; Thrashing Machine, Winnowing Machine, Turnip Cutter, Oil-cake Cutter, Drag, Harrow, and Clod Roller, from Mr. Crosskill's, Beverley; 4 improved Ploughs from Black and Son, Ford; Gardner's Turnip Machine, and Wilk's Straw Cutter, from Wilson and Sons, Berwick; an Improved Sheep-dipping Apparatus, most beautifully constructed, from Mr. Geo. Wilson, Coldstream; Hunterian Ploughs, from Mr. Hunter, Edinbro'; an improved Plough, and Subsoil Plough, from Mr. J. Wilkie's, Uddingston, near Glasgow; 2 Ploughs from Mr. West's, Lindie, Dundee; 2 Ploughs from Mr. J. Coltman's, Athelstaneford, near Haddington; Bigg's Sheep-dipping Apparatus, &c., &c.

For dining and festive purposes, a very showy pavilion was erected within the Barrack square. The south, east, and west sides of the building forming three sides of the pavilion, and a strong wooden wall erected on the north side. The roof consisted of five divisions, each resembling the roof of a house, and is supported by forty columns; the workmanship of the roof hidden by an artificial ceiling of white calico, the same material covering all the walls, ornamented with blue and red drapery, strips of which, of each colour, entwined all the columns. At the west end of the erection the royal arms were painted, and immediately opposite the arms of the borough. On the south side a gallery was made for the accommodation of 300 ladies, extending the whole length of the building. The pavilion was lighted with gas by means of fourteen chandeliers, pendant from the roof, and by ten branches below the ladies' gallery.

At half-past five o'clock the Council Dinner was held in one half of the pavilion (the other half being separated by a curtain for the purpose of holding a ball in the evening), at which about 300 sat down, the Duke of Roxburgh in the chair, supported on the right by the Mayor of Berwick, G. Johnson, Esq., M. D., R. Ingham, Esq., recorder of the borough, Charles Baillie, Esq., Hon. H. F. Scott, John Wilkie, Esq., Fielden and John Campbell Renton, Esqs., and on his left by the Duke of Richmond, Lord Howick, Sir David Milne, Lord Fred. Fitzclarence, and Sir Samuel Brown; the vice-chair was occupied by Lord Elcho, who had on his right and left the sheriff of Berwick, Col. Hogarth, George Baillie, Esq., Sir Edward Colebrooke, Sir Hugh Hugh Campbell, Bart., Sir Thomas Hepburn, and Sir C. Ferguson. After the cloth was drawn,

In proposing the health of the Queen, the noble Chairman observed that he had been given to undertand that this meeting was to be considered mainly a private meeting, but when he looked at the very numerous party before him it seemed to him that the meeting had assumed more of a public character. "The Queen" was then pledged with loyal enthusiasm, after which the chairman gave, in succession, "His Royal Highness Prince Albert and the Princess Royal," "The Queen Dowager, and the rest of the Royal Family," and "the Army and Navy."

Sir David Milne acknowledged the last toast.

The Chairman now said it had been deemed advisable to pursue the same course which the society had adopted at former meetings, namely, the reading of essays on questions of interest connected with agriculture, by gentlemen eminently qualified for the task. They were now about to hear one by professor Johnston, and he begged to intimate that any gentleman would be at liberty to put questions touching the more difficult parts of the subject.

Professor Johnston was received with general applause, and said—Had he been permitted to select his own time for addressing them upon the subject which he was now about to bring under their notice, he should not have taken the hour immediately after dinner. But they were probably aware that he appeared at the request of the council of the society, inconvenient as the time was, and he therefore requested their indulgence. He also wished to bespeak their attention to theory in connection with agriculture. To the members of the Highland Society of Scotland, he knew he need say nothing to persuade them of the importance of theory—of chemical and geological theory—as applied to agriculture, but they were aware that throughout the country generally, there was, amongst practical agriculturists, a decided objection to theory, believing that persons unconnected with practice advancing theoretical notions were likely to bring forward, as points deserving of notice, points really of little importance. And yet, if the art of culture is ever to be brought up to the state of a science, it could only be by the aid, chiefly, of the sciences of chemistry and geology; and therefore, if the theoretical deductions of the chemist and of the geologist were to be cast aside as unworthy of notice, because they were incomplete or imperfect, for the same reason we ought to reject all scientific knowledge, for knowledge of every kind is progressive. Now, scientific men were willing, were anxious to assist the practical agriculturist, and therefore he thought we ought to consider who were chiefly benefited by the application of science to agriculture—that it was the practical man, and not the theoretical scientific man—and that the suggestions of chemistry and geology ought accordingly to be received with candour, but at the same time with that caution with which all new suggestions should be received. (*Applause.*) The application of chemistry to agriculture had long been familiar to agriculturists in general, and he would therefore occupy the few minutes allotted to him by making a few remarks on the way in which a knowledge of geology might be made applicable to the most important purposes of agriculture. They knew that geology had for its object the examination of the crust or outside of the globe, and respecting it something like general conclusions had been arrived at. For example, it had arrived at the conclusion, firstly, that the outer surface of the globe consists of alternate layers of different kinds of rocks, and hence these rocks are called stratified. But in other parts of the world there occurred other rocks not so built up, and which were therefore called unstratified. The next point to which the geologist arrived was this, that these stratified rocks consist essentially of three different kinds of bits—of bits of sand hardened into sand-stone—of bits of clay hardened into slate—and of bits of lime-stone, which were sometimes hard, as on Berwick shore, but sometimes soft as chalks. Thus the stratified rocks consist of lime, clay, and sand. Now, by observing the wearing away of these rocks on the surface, it was known that they crumbled down, in some places more rapidly, in some more slowly, forming a species of soil. Suppose the rock crumbling to be sandstone, a soil was formed entirely of sand, and so with the two others. The science of geology told them the reason of this. There were some rocks which consist of a mixture of sand, clay and lime: if they went down to Berwick shore they would see that the sea was continually wearing away the cliff, and in that cliff they could see rocks of various kinds; and they knew that when these crumbled down they became the soil best fitted for growing crops. Now, observe how this deduction bears upon facts. It would be improper to bring forward the various functions, in regard to vegetations, performed by the soil, but he must allude to the constitution of plants. If they took the trees of the forest and burned them down they gained the wood ashes. So if they burnt other vegetable matter they found that all was derived from the soil, and hence were derived pot-ash, soda, and siliceous matter, and phosphate of lime. The learned professor then entered upon a statement of the relative properties of the various kind of soils and vegetable substance, and their fattening qualities, deducing another illustration of the importance of geology, in the fact of its enabling us to bring these matters to direct application in every-day life. Passing to a notice of the unstratified rocks, he said that they, like the cheviots, had, at some former time, all been in a melted state—in fact, were lava. It was well known to chemists that the greater part of these rocks had been capable of melting, because they contained a large quantity of pot-ash and soda; and so it was that soils derived from the crumbling down of these rocks yielded to plants a larger quantity of nutrition than could be derived from stratified rocks. After mentioning other instances in which geology, by acquainting us with the qualities of the earth, was capable of being turned to great practical advantages, the learned gentleman concluded with observing that it was for the farmer to put into practice the suggestions of the theorist, always taking care that he never ran any risk which he could not afford. Agriculture being the foundation of all other prosperity—being the foundation upon which the superstructure of natural prosperity is built—it was the duty of every good subject to contribute to the advancement of that art, and at the same time to avail themselves of every assistance which was afforded to them, and to listen with favour to those persons out of their own line who were willing and desirous to offer suggestions to them, in order that they also might contribute to this great national cause. (*Applause.*)

The CROUPIER then called upon them to dedicate a bumper to a toast which concerned the welfare of this country, which all were so desirous to promote. All would acknowledge that upon the prosperity and success of agriculture the comfort of the people was in a great degree dependent, and that it was one of the vital and essential sources of that opulence which has raised this country to so great an eminence among the nations of the world. (*Applause*). In promoting the knowledge of agriculture to the high degree of perfection attained in this country, the efforts of the Highland Society had been mainly instrumental. At its meetings a more thorough knowledge and investigation of all the scientific subjects connected with agriculture had been diffused abroad, and by its wide-spreading ramifications and local societies a spirit of rivalry generally existed. Travelling through this country, we must perceive the vast improvement which was taking place, both in the cultivation of the soil and the improvement of the various descriptions of stock, and in confirmation of this it was only necessary to look round that numerous company, and at the great preparations for the meeting to-morrow, when he was convinced overwhelming proofs would be afforded to remove all scepticism relative to the motives and spirit with which the members of the Highland Society are actuated; and he was proud to say that they could comprehend in their numbers men whose station and presence they were proud to recognise. (*Applause*). On to-morrow, the great day of strife, of contention, on this neutral ground, so famous in history, there would not be heard the din of strife or war, but all would meet animated by the spirit of honourable emulation—all eager for the contest of improving the interests of our country. (*Applause.*) He gave "The Highland Society." (*Great cheering.*)

The CHAIRMAN said he had the greatest pleasure in rising to propose the next toast, for it was one for which no apology need be offered, and which he was sure would command an enthusiastic reception; he begged to give the health of his noble friend, president of the Highland Society. (*Great applause.*) They had had as presidents many exalted in rank and distinguished for ability; but of this he was persuaded, that the society had never been placed under the auspices of one who held its interests more dear—who would more zealously advance those interests—or who more ably discharged the duties of his office, than the noble duke. (*Applause.*) As a landlord, he was beloved by his numerous tenantry, and they had ever seen him anxious to promote the welfare of the labouring classes on his estates both here and in the south. Standing, however, as he did in the noble duke's presence, it would ill become him to say more, but of this he felt convinced that the toast would meet with a hearty concurrence from all there. (*Three times three, and great applause.*)

The Duke of RICHMOND was loudly cheered on rising, and, when this had subsided, said—He could not plead that he was unused to thank such large meetings for the honour conferred upon him by drinking his health, because he ever had been and trusted he ever would be in the habit of taking every opportunity of meeting the farmers of the country, whose interest and his he considered to be one and the same. (*Hear.*) His noble friend had spoken of him in terms too flattering: he had said that he was respected by his tenantry, and that upon every occasion he had done his duty to the labouring classes. He (the noble duke) took no credit for doing that which belongs to the station he occupies; he took it that the greatest privilege of rank was to treat the tenantry as he did his—as part of his own family—(*hear*)—and his example showed them that they should do to their labourers what he did to them. The greatness of the country consisted in having the several ranks of society bound together in one bond of union. Why was England so great, so free, and so independent a nation as she was? Because all classes of society were bound together by a chain which no foreign power could ever hope to sever. (*Applause.*) He felt, however, that the compliment just paid to him, unacquainted personally as he was with most of them, was to the station which he occupied as president of the Highland Society. He could only assure them that he should endeavour to-morrow to perform that duty to their satisfaction. If he came to-night into this room as a stranger to them, he hoped to leave it to-morrow with feelings on their part that he had done his duty. (*Cheers.*) He sincerely thanked them for the compliment, and whenever he ceased to respect and esteem the farmers, might they cease to esteem him. (*Loud cheering.*)

The CHAIRMAN announced that John Grey, Esq., of Dilston, had, at the request of the society, prepared another essay, which, in the absence of Mr. Grey, would be read by Mr. Bell.

Mr. BELL, W. S., Edinburgh, then read an account of some experiments made by Mr. Grey.

The Duke of RICHMOND rose to propose the next toast—"The Duke of Roxburgh and the Local Committee." He felt the great advantage that science would be to agriculture, and the importance of agriculture itself, but he felt that they were yet called upon to perform a duty to the gentlemen who had exerted themselves in their service. He spoke in the presence of many who knew that his noble friend (the Duke of Roxburgh) as a landlord, always endeavoured to do his duty to his tenantry, and that he was not one who would recommend his tenantry to improve the land without assisting them to do it. The toast was drank with all the honours.

The noble CHAIRMAN thanked the Duke of Richmond for the flattering terms in which he had introduced the toast, and the company for the warm reception with which they greeted it. The merit of the arrangements of the meeting was due exclusively to the members of the committee, not to him. True it was that he, in connection with the noble croupier, was appointed convener, but they would agree with him that their office had been an honorary one, and that to the committee, therefore, they were indebted for all that had been done to ensure the comfort of this meeting. Indeed, so little was he accustomed to business of this nature, that he would willingly have resigned the situation he now held, but that he felt that in doing so he should be abandoning his duty, and that it would appear a slight upon the society of which he was proud to be one of the vice-presidents. (*Cheers.*)

The CROUPIER proposed the health of the Marquis of Tweeddale, and in doing so, expressed the regret he felt at the absence of the noble marquis. (*All the honours.*)

Lord F. Fitzclarence, in complimentary terms, gave the health of Lord Elcho, croupier. (*Three times three.*)

Lord Elcho believed that no one repeated with greater sincerity the oft-told tale, that he felt extremely flattered by the manner in which the toast had been received. He only wished that his capabilities had been equal to his wishes, and the performance of his duties this day would have been much more satisfactory. The pleasure he felt at the toast was enhanced by the manner in which it had been proposed, and he trusted that his future conduct would merit the eulogium which had been passed upon him. (*Applause.*)

Sir H. Campbell, M.P., called for a bumper to "the plough and agriculture," and after expressing his regret that it had not fallen to the lot of the Marquis of Tweeddale to propose it, said that as far as his own feelings were concerned, he was proud to propose such a toast. He owed every thing in the world, whether public or private, to agriculture, and from agriculturists he had received kindnesses which he never could forget. It would be fulsome adulation on his part were he to enter upon a panegyric on the distinguished character of the agriculturists of this country, but he besought them to believe that thought he said little he felt much. (*Great cheering.*)

The Chairman gave the "Mayor and Corporation of Berwick," characterising the mayor as the working chairman of the local committee. The exertions of the committee were worthy of the town, and had provided the accommodation which all so much admired. (*Three times three.*)

G. Johnson, Esq., Mayor, returned thanks, and assured them that the town were fully sensible of the honour conferred upon it by the holding of so important an exhibition within its walls, and would endeavour to show that they fully appreciated that honour.

The Chairman gave "the Strangers," and

Lord Howick then said that he had been requested to propose a toast which he was sure they would cordially agree in drinking—it was, "both Sides of the Tweed." They must all unite in the sentiment which these words expressed, in wishing most sincerely the prosperity of the two great countries which met upon the noble river that washed the walls of this town; and, particularly, success to both in the pursuits of agriculture, which it was the object of this meeting to promote and foster. (*Cheers.*) The vice-chairman had already alluded to the fact that they were now met within walls where formerly occurred the bloody contests of border warfare, to carry on only the peaceful contests of each country endeavouring to show that it is the most able to excel in the pursuits of agriculture. He trusted that the same spirit which was formerly employed in a different kind of warfare would now be carried into this peaceful and amicable strife, which was at present being waged. By doing so, he was persuaded that we should promote the prosperity of the country, and that the strength and power of this united kingdom would then be maintained; and as the fortifications which surround this town had been allowed to fall into decay from the cessation of our ancient border contests, so by keeping up the wealth and prosperity of England and Scotland, which mainly depended upon their agriculture, we should make this united empire so powerful, so strong, and so secure, that it would never again be necessary to build up these dismantled fortifications for the purpose of repelling foreign invaders. (*Loud cheers.*)

The Croupier proposed the healths of the authors of the scientific treatises which had been read—Professor Johnston and Mr. John Grey.

Professor Johnston very briefly returned thanks.

The Duke of Richmond gave "the tenantry of the country, and prosperity to them," and observed that it was impossible to go through any part of the country without seeing the great exertions which the tenantry are making in the improvement of the land. He felt that in that improvement the tenantry were not only benefitting themselves, and hereafter their landlords, when their leases were expired, but they were conferring a great benefit upon every class, for they were giving great employment to the labouring classes in effecting those improvements. (*Hear.*) When he saw the draining tiles laid in the field for the purpose of improving the land, he felt a satisfaction in knowing that the labourer would get his reward. He believed that the science of agriculture was yet in its infancy, and he entirely agreed with Professor Johnston in his recommendation never to engage in an experiment unless they could well afford it. That had been his advice to the farmer since he first had the honour of addressing them. (*Three times three.*)

Mr. John Wilson, Edington, spoke in reply, and after acknowledging the compliment in a suitable manner, invited strangers to visit the beautiful valley in this district, and then proceeded to observe that he had been further requested to propose the health of "the peasantry"—a class still more important to the country than the tenantry. (*Hear.*) As tenantry, they were placed in a medium position betwixt the land-holders and those to whose daily labour the country was indebted for its abundance, and in that way the tenantry certainly did occupy an important position. A sentiment very frequently on the lips of farmers on occasions like the present, was, "live and let live," and he hoped that on all occasions they (the tenantry) contemplated those below as well as those above themselves when uttering that sentiment. This district had for a long period been very highly favoured in regard to the character of its agricultural labourers. Most of those present were probably aware that in the border counties there is a peculiarity as to the employment and payment of agricultural labourers, who were known by the term "hinds." He was delighted to find that the Highland Society had directed their attention to this very important subject, and in a late number of their journal he found an essay on a different system, which prevails very extensively in Scotland, and by which chiefly unmarried servants were employed—a system which, from all he knew of it, he had been led unqualifiedly to condemn. In this essay we had the testimony of those who were acquainted with that system, and who were alive to its evils; and perhaps he might be permitted to say that he had all his life been amongst those who are maintained in a different way, and could give his testimony to the advantages of the hind system. The characteristics of the hind system were—the employment from year to year of married servants—the providing of cottages for them upon the farms where they work, and their payment chiefly in kind; and he believed that these characteristics had the most beneficial results upon the class themselves and upon the community; he believed it was chiefly owing to this cause that in this district there was such a remarkable absence of crime. (*Hear.*) Those who had attended to this subject, would bear him out when he said that our criminal courts showed an almost total absence of serious crime amongst the agricultural labourers: it was only within these few weeks that the superintendent of the police had expressed to him his surprise at the few cases that occurred, and even they were furnished by vagrants. (*Applause.*) They must not suppose that this absence of crime arose from any inferiority inherent in the class: it arose very much from the manner in which the arrangements betwixt the tenantry and their labourers were founded, and he thought the county would be much benefitted were the system extended. He had therefore to propose that they join with him in drinking health to the peasanty of the county, and he hoped they would not allow their good wishes to evaporate in that room. There were many ways in which they might materially increase their comfort, and he could say from experience that they in every way deserved the kind offices of their employers and landlords. There was one most important particular in which he felt the landlords should interest themselves—that was, that superior accommodation be furnished to them. (*Cheers.*) While the farm buildings were worthy of the district, the hinds' cottages were frequently the worst buildings on the estate.

THE GREAT SHOW.

THURSDAY.

By five o'clock in the morning, which fortunately was a fine one, the show-yard presented a most lively and animated appearance. At the different gates were posted the respective functionaries of the society, with members of the committee to assist in placing the various kinds of stock in the different portions of the yard allotted to them; and so excellent were the arrangements, that the whole, which in certain classes were on a scale of magnitude entirely unprecedented, was conducted with a regularity and dispatch which was truly astonishing. The excitement, or rather rivalry, which prevailed, in consequence of the position of the society being on this occasion fixed between the two kingdoms, was marked most strongly by the evident efforts of both sides of the Tweed to do their best—and certainly never was there a finer display; never did the benefits of agriculture and breeding stand forward so prominently in all their attractive recommendations as the boon to industry and harbinger of the future improvement of this great country. Some of the Leicester sheep were good, and in number exceeded anything of the kind ever produced; while the hardy Cheviots vied in size and symmetry with the favoured flocks of the more cultivated plains. The principal premiums in this description went to the north of Scotland. The crosses of all the varied descriptions, comprising this beneficial improvement upon stock in all its interesting forms, were truly astonishing, and the weights of the respective animals, as well as their fleeces of wool, were praised and commended. The premiums, as might naturally be expected, were awarded over the length and breadth of the country. But Berwickshire, East Lothian, Roxburgh, Northumberland, and the extreme north of Scotland had the best share.

The show yard was open from ten o'clock to visitors paying 2s. 6d. for admission; but from about mid-day to the time of closing, the entrance money was at 1s. Immediately under the ladies' gallery were the committee rooms, where the reports of the judges underwent all necessary discussion in order to the final award of the prizes determined by them during the day. An anxious crowd stood awaiting the result without, while their Graces of Richmond, Buccleuch, and Roxburghe, the Marquis of Tweeddale, and other distinguished office-bearers and members of the society, were assisting the deliberations within. At length the lists were definitively settled; and the walking of the prize cattle along the arched or bridge platform, commenced under the auspices of Mr. Burn Murdoch, and other gentlemen, members of the society, who proclaimed to the spectators the qualities and merits of each particular kind of stock, relative as well as actual, the particular prize which it had obtained, and the name of the breeder or owner. The anxiety to inspect the prize stock was very great, but it was amply gratified, both during the passage of the animals on the ridge of the platform, and along the lanes of gazers that led to the one extremity of it, and from the other.

The prime Cheviot sheep are from the remote county of Sutherland. This stock was introduced many years ago from the English Borders, thus showing that the far north can now excel the part where this description of stock was originally reared. In further proof of this, some of the Border farmers have offered high prices for the tups and gimmers, with a view of improving the stock in their locality.

The following noblemen and gentlemen officiated as judges:—

SHORT-HORNS.

Marquis of Tweeddale, Messrs. Wright, Romely, Chesterfield, Derbyshire; Bartholomew, Goltho, Lincolnshire; Wiley, jun., Brandsby, Yorkshire.

GALLOWAY, ANGUS, AND ABERDEENSHIRE POLLED BREEDS.

Messrs. Watson, Keillor, Forfarshire; Wilkin, Bush, Longtown; and Sim, Redkirk, Gretna.

WEST HIGHLAND BREED.

Messrs. Lorne Campbell, Roseneath, and M'Donald, Craigruie, Argyllshire.

CART-HORSES.

Messrs. Wilkie, Gillespie, Gateside, Douglas Mill; Watson, Professor Dick, Veterinary College, Edinburgh.

THOROUGH-BREDS, AND HUNTERS.

Messrs. Orde, Nunnykirk, and George Baillie of Mellerstain, Roxburghshire.

LEICESTER SHEEP.

Messrs. Burgess, Holmpierrepoint, Notts; Buckley, Normanton Hill, Loughborough; Chapman, Stonehigh, Warwickshire; and Stone, Rowley Field, Leicestershire.

CHEVIOT SHEEP.

Mr. Sim; Mr. Jobson, Chillingham Newtown, Northumberland; Mr. Hunt, Thornington, Northumberland; and Mr. Scott.

BLACK-FACED SHEEP.

Mr. Lorne Campbell, Mr. Macdonald, and Mr. Gillespie.

SOUTHDOWN SHEEP.

Mr. Wood, Kimbleworth, Durham; Mr. Watson, and Mr. Purves.

ANY BREED, AND EXTRA STOCK—CATTLE.

Mr. Wright, Mr. Bartholomew, and Mr. Watson.

ANY BREED, AND EXTRA STOCK—SHEEP.

Mr. Wood and Mr. Watson.

SWINE.

Marquis of Tweeddale, Mr. Grey, Dilston, Northumberland, and Mr. Hunt.

SEEDS.

Mr. Begbie, Mr. Dickson, Hassendean Burn, Roxburghshire; Mr. Clay, Berwickshire; Mr. George Henderson, Mr. James Henry Innes, and Mr. Hunter, Swinton Quarter, Berwickshire.

ROOTS.

Professor Low, Edinburgh; P. J. Selby, Esq., of Twizel House, Northumberland; Mr. Lawson, Edinburgh, and Mr. Stephens.

IMPLEMENTS OF HUSBANDRY.

The Duke of Buccleuch; Sir Samuel Brown, Netherbyres; James Hunter, Esq., Thurston; Mr. Thomson, Pawston; William Steuart, Esq., of Glenormiston; Mr. Richard Hunter, Edinburgh; Mr. Alexander, South Bar; Mr. Slight, Edinburgh.

PORTRAITS OF ANIMALS FOR THE MUSEUM.

Mr. Burn Murdoch, of Coldoch, Stirlingshire; and Mr. Lindsay Carnegie, of Kimblethmont, Forfarshire.

AWARDS OF THE JUDGES.

The premiums were awarded as follows, the list and the accompanying remarks having been furnished officially:—

SHORT-HORNS.

It was to have been expected, from the attention which the farmers of the Borders have long paid to the rearing of short-horn cattle and Leicester sheep, that they would occupy a conspicuous place in the exhibition which was to take place at Berwick, and accordingly of the whole number of stock entered for competition, amounting to the large number of 962 head, they together amounted to 214 in number.

I. Of the class of short-horns, there were exhibited in all 76 head, consisting of 39 bulls, 19 cows, 12 heifers, and 6 fat oxen. It was generally allowed that this class of stock exhibited a very uniform appearance as to quality, and in particular the cow which obtained the first premium was considered as one of the most perfect animals that was ever exhibited.

For the best bull, calved after 1st January, 1837, one hundred sovereigns, to Mr. Ferguson, Simpson Mains, Pitfour, Aberdeenshire. This bull was sold afterwards to Messrs. Tempest and Whittaker, Yorkshire, for 200*l*.

For the second-best do., thirty sovereigns, to Mr. Thomas Howey, Lilburn Grange, Northumberland.

To the breeder of the best bull in this class, the honorary silver medal, to the exhibitor, Mr. Simpson.

Animal next in merit, belonging to Mr. James Hood, Pathhead, Berwickshire.

For the best bull, calved after 1st January, 1840, twenty sovereigns, to Mr. John Mason, Hopper, Newham, Durham.

Animal next in merit, belonging to Mr. Thomas Simson, Blainslie, Roxburghshire.

For the best cow, fifteen sovereigns, to Mr. John Boote, Killerby, Yorkshire.

For the second-best cow, ten sovereigns, to Mr. Christopher Bambridge, Lumley Park, Durham.

Animal next in merit, belonging to Mr. John Hunt, Thornington, Northumberland.

For the best three cows, fifteen sovereigns, to Mr. William Smith, Shedlaw, Northumberland.

Animals next in merit, belonging to Mr. Atkinson, Ewart.

For the best heifer, calved after 1st January, 1839, ten sovereigns, to Mr. Thomas Crofton, Holywell, Durham.

For second-best ditto, seven sovereigns, to Mr. John Booth, Killerby, Yorkshire.

For the third-best do., five sovereigns, to Mr Thomas Ferme, Braidwood, Edinburgh.

Animal next in merit, belonging to Mr. Robert Jobson, Turvielaws, Northumberland.

For the best heifer, calved after 1st January, 1840, ten sovereigns, to Mr. Thomas Crofton, Holywell, Durham.

For the second-best do., five sovereigns, to the said Mr. Crofton.

Animal next in merit, belonging to Mr. William Tod, Elphinstone Tower.

For the best two oxen, calved after 1st January, 1838, twelve sovereigns, to Mr. William Smith, Skidlaw, Northumberland.

For the second-best two do., eight sovereigns, to Mr. William Smith, Jun., Benton, Northumberland.

Animal next in merit, belonging to Mr. Wilson, of Cumledge, Berwickshire.

For the best two oxen, calved after 1st January, 1839, twelve sovereigns, to said Mr. John Wilson, of Cumledge.

II. GALLOWAY, ANGUS, AND ABERDEEN POLLED BREED.

For the best two oxen, calved after 1st January, 1837, fifteen sovereigns, to the Earl of Haddington.

For the second-best two oxen, ten sovereigns, to John Miller, Esq., of Ballumbie, Forfarshire.

The animal next in merit belonged to Mr. Alexander Craig, Kickba, Sutherland.

III.—WEST HIGHLAND BREED.

For the best two oxen, calved after 1st January, 1837, fifteen sovereigns, to Sir John Hall, of Dunglass, Bart.

For the second best two oxen, ten sovereigns, to Mr. Thomas Saunders, Fenwick Head, Northumberland.

For the best two oxen, calved after 1st January, 1839, bred by the exhibitor, and never housed, ten sovereigns, to Colonel Malcolm, of Ardgower.

IV.—ANY BREED.

For the best two oxen, pure or crossed, calved after 1st January, 1837, fifteen sovereigns, to the Duke of Richmond.

The animal next in merit, belonged to Mr. Thomas Nuddison, Wandon, Northumberland.

For the best two oxen, calved after 1st January, 1838, ten sovereigns, to Mr. George Moffat, Doddington, Northumberland.

To the owner of the five best steers, calved after 1st January, 1840, which, in the opinion of the judges, will best remunerate the feeders, fifteen sovereigns, to the Earl of Haddington.

To the owner of the five best heifers, calved after 1st January, 1840, which, in the opinion of the judges, will best remunerate the feeders, fifteen sovereigns, to John Wilson, Esq., of Cumledge.

HORSES.

The number of horses entered for competition amounted to 81, of which 21 consisted of cart stallions, 19 cart mares, and 23 cart fillies and colts. There were 4 blood stallions, and 14 mares for breeding hunters. The awards of the judges were as follow:—

For the best cart stallion, not exceeding eight years, fifty sovereigns, to Mr. Robert Bowie, Gilmidland, Stirlingshire.

For the second best ditto, thirty sovereigns, to Mr. Richard Thompson, Doddington, Northumberland. It was objected to as being older than the regulations prescribed, and evidence of its proper age to be produced by its owner.

For the third best do., twenty sovereigns, to Mr. David Broatch, Haithwaite, Cumberland.

Animal next in merit, belonging to Mr. James Black, New Heaton, Berwickshire.

For the best thorough-bred stallion, twenty sovereigns, to David Robertson, Esq., Ladykirk, for his horse "Dardanelles."

Mr. Robertson's horse "Patron," next in merit.

For the best cart mare, fifteen sovereigns, to Mr. James Elliot, Lamberton, Berwickshire.

For the second best do., ten sovereigns, to Mr. Alexander Henderson, Long Niddry, East Lothian.

Animal next in merit, belonging to John Wilson, Esq., of Cumledge.

For the best mare for breeding hunters, ten sovereigns, to Mr. John Hosick, Hutton Main, Berwickshire.

Animal next in merit, belonging to Mr. David Skirving, Campton, East Lothian.

For the best filly, or colt, for agricultural purposes, foaled after 1st January, 1838, ten sovereigns, to Mr. William Buchan, Rathoball, Edinburghshire.

Animal next in merit, belonging to Mr. James Elliot, Lamberton, Berwickshire.

For the best filly, or colt, foaled after 1st January, 1839, ten sovereigns, to Mr. James Graham, Cubbyhill, Cumberland.

Animal next in merit, belonging to to Mr. Robert Hogarth, Scramerston, North Durham.

For the best filly, or colt, foaled after 1st January, 1840, five sovereigns, to Mr. John Wilson, Edington Mains.

II.—SHEEP.

The exhibition of sheep was very large, far more so than at any former exhibition of the society—the entire number amounting to 572 head. Of this number the Leicester sheep alone comprised 250, consisting of 88 tups, 220 ewes, and 30 dinmonts. The awards of the judges of the class of sheep were as follows:—

LEICESTER SHEEP.

For the best tup, forty sovereigns, to Mr. John Simmons, Brockmill, North Durham.

For the second best tup, fifteen sovereigns, to said Mr. John Simmons.

For the third best tup, ten sovereigns, to Mr. Andrew Thompson, Highbridge Hall, Roxburgshire.

Animal next in merit, belonging to the Duke of Buccleuch.

For the best shearling tup, forty sovereigns, to his grace the Duke of Buccleuch.

For the second best tup, fifteen sovereigns, to Mr. John Biss Ogden, Harriet Field, Berwickshire.

For the third best tup, ten sovereigns, to Mr. George Reid, Ballancrieff, East Lothian.

Animals next in merit, belonging to Mr. John Simmons, Brockmill, and Mr. George Brown, Halls, Haddington.

For the best pen of five ewes, ten sovereigns, to Mr. George Brown, Halls, Haddington.

For the second best ewes, five sovereigns, to Mr. Andrew Thompson, Higbridge Hall, Roxburgshire.

Animals next in merit, belonging to Mr. William Taylor, Presson, Northumberland.

For the best pen of five gimmers, ten sovereigns, to Mr. G. Brown, Halls, Haddington.

For the second best gimmers, five sovereigns, to Mr. John Simmons, Brockmill, North Durham.

Animals next in merit, belonging to Mr. Thomas Maddison, Wandon, Northumberland.

For the best pen of five dinmonts, five sovereigns, to his grace the Duke of Northumberland.

The second in merit, belonging to Mr. Thomas Maddison, Wandon.

N.B. In awarding the first premium in this class, the judges stated it as their opinion, that the best tup was not a pure bred Leicester, and should the exhibitor fail to prove to the satisfaction of the Directors of the Society that he is pure, then they award the first premium to the next sheep in the above list.

CHEVIOT BREED.

For the best three tups, twenty sovereigns, to Mr. William Riddell, Cappuck, Roxburghshire.

For the second best three tups, ten sovereigns, to Messrs. Young and Craig, Bighouse, Sutherlandshire.

Animals next in merit, belonging to Mr. Thomas Forster, Scrainwood, Northumberland.

For the best three shearling tups, fifteen sovereigns, to Messrs. Young and Craig, Bighouse, Sutherlandshire.

For the second best three shearling tups, five sovereigns, to Mr. Thomas Elliot, Hindhope, Roxburgshire.

Animals next in merit, belonging to Mr. Thomas Forster, Scrainwood, Northumberland.

For the best pen of ten ewes, ten sovereigns, to Mr. Thomas Elliot, Hindhope, Northumberland.

For the second best ten ewes, five sovereigns, to Mr. Andrew Anderson, and Mr. John Grieve, Glendinning, Dumfries-shire.

Animals next in merit, belonging to Mr. Thomas Forster, Scrainwood.

For the best pen of ten gimmers, ten sovereigns, to Messrs. Young and Craig, Bighouse, Sutherlandshire.

For the second best ten gimmers, five sovereigns, to Messrs. Anderson and Grieve, Glendinning, Dumfries-shire.

Animals next in merit, belonging to Mr. William Aitchison, Menzion, Peeblesshire.

For the best ten fat wedders, lambed in 1838, five sovereigns, to Messrs. Young and Craig, Bighouse, Sutherland.

Animals next in merit, belonging to Mr. John Bolam, Easington Grange, Northumberland.

BLACKFACED BREED.

For the best three tups, ten sovereigns, to Mr. Robert McTurk, Hastingshall, Dumfriesshire.

Animals next in merit, belonging to Mr. John Murray, Hearthston, Peeblesshire.

SOUTHDOWN BREED.

For the best tup, ten sovereigns, to his grace the Duke of Richmond.

Animal next in merit, belonging to Mr. James Grey, Kimmerston, Northumberland.

For the best pen of five ewes, five sovereigns, to his grace the Duke of Richmond.

CROSS BREEDS.

For the best pen of five dinmonts, cross between Leicester tup and Cheviot ewe, five sovereigns, to Mr. Christopher Howey, Ilderton, Northumberland.

Animals next in merit, belonging to Mr. James Traill, Esq., of Ratter, M.P., Caithness.

For the best pen of five wedders, of any cross and age, five sovereigns, to Mr. James Skirving, Luffness Mains, East Lothian.

The wedders of Mr. Horne, of Scouthel, and of Mr. Traill, of Ratter, were remarked by the judges as deserving of notice.

SWINE.

Ten boars and eleven sows were entered for competition. The awards of the judges were as follow :—

For the best boar, five sovereigns, to Mr. John Wilson, Edington Mains, Berwickshire.

For the second best boar, four sovereigns, to the Duke of Buccleuch.

The animal next in merit, belonged to Mr. James Chrisp, Sandyknowe, Berwickshire.

For the best sow, five sovereigns, to Mr. George Smith, New Ladykirk, Berwickshire.

For the second best do., four sovereigns, to Mr. Sober Watkins, Plumpton House, Cumberland.

The animal next in merit, belonged to Mr. George Grey, Millfield Hill.

IMPLEMENTS AND MACHINES.

Mr. Cook, of Wooler, exhibited models of a lime-spreader and turnip-slicer, for which 3*l*. were awarded. Mr. Crosskill, of Beverly, exhibited several well-constructed machines, among which a winnowing machine deserves particular notice, for which the silver medal was awarded. Mr. Sowerby, of Sheffield, exhibited several reaping-hooks of cast steel, on an improved principle, combining cheapness with strength, which promise to prove very useful. They also exhibited a very good hay or straw-cutter. Mr. Andrew Elliot exhibited two hay-forks of steel, of very beautiful workmanship, for which 1*l*. was awarded. Mr. John Geddes, Cargen Bridge, Dumfriesshire, exhibited a broad cast sowing machine, for which 3*l*. was awarded; also a turnip-sowing machine, which received a premium at the society's last show at Dumfries; and in consequence of certain improvements subsequently made by him on it, a model was recommended to be procured for the society's museum in Edinburgh. Premiums were voted for, and favourable mention made of some other machines. A considerable number of other implements were exhibited, such as a dynamometer, by Messrs. James Slight & Co., Edinburgh. A cattle stomach-pump, by Messrs. John Brown & Son; a drain or road-leveller, by Mr. Hunter, of Thurston. Among the ploughs a double furrow-plough and a subsoil-plough with wheel, were deserving of particular notice. A model of an improved cottage-bed by Dr. Charles Wilson, Kelso, combining facility of ventilation, with easy access for medical attendants, deserves particular notice, and for which a silver medal was awarded; specimens of beautifully made drawing-tiles, by Mr. Ainslie, East Lothian. Specimens of straw in different stages of decomposition, induced by a peculiar process, were submitted for inspection by Mr. R. Ballingall, Kingsdale, Fife.

SEEDS AND ROOTS.

This department was of considerable extent, and of great interest. Various specific premiums were offered, which were awarded as follows:—White wheat, to Mr. Robert Hogarth, Scremerston, Berwickshire; red wheat, Mr. John Clover, Kirkling, near Newmarket; barley, to Mr. Thomas Maddison, Wandon, Northumberland; potato oats, to the Duke of Richmond, for a very fine specimen, weighing upwards of 48 lbs. per bushel; sandy oats, the premium was also voted to the Duke of Richmond, for a specimen weighing 46 lbs. per bushel; tares, to Mr. Andrew Lockie, Kelso; perennial rye-grass, Messrs. P. Lawson & Son, Edinburgh, and Mr. David Roughead, Haddington. In the class for any new variety of seed introduced into the culture of the farm, various samples were exhibited, but the judges were of opinion that they required further trials to be made. Messrs. Lawson & Son, Edinburgh, obtained the medal for best Swedish turnip seed; and a very fine sample in this class, belonging to Mr. David Rougbead, Haddington, was noticed by the judges in terms of commendation; for white globe turnip seed, Messrs. Lawson & Son also obtained the premium; Mr. Andrew Lockie, Kelso, produced a very fine sample in this class.

There were a very numerous list of competitors for the premium for roots. For the best Swedish turnips, the premium was awarded to Mr. Whyte, Littledean, near Ayton. For yellow turnips, only one specimen, to which the premium was assigned. The exhibitor was Mr. Adam Calder, Ayton Law, near Ayton. For white turnips, Mr. William Smith, jun., Burton, near Bamburgh. Sir Thomas Mackdougal Brisbane, Bart., exhibited several roots and plants, and in particular fine specimens of Drumhead cabbage.

For the best and approved collection of seeds, roots, and plants, the premium of five sovereigns and the silver medal was awarded to Messrs. Lawson & Son, Edinburgh. The collection of Messrs. Hogg and Wood's Coldstream, was also very extensive and well arranged, and highly worthy of commendation. The collections of Mr. Andrew Lockie, Kelso, and Mr. David Roughead, Haddington, were reported by the judges as worthy of notice.

There were also exhibited specimens of British tapioca, by Mr. John Dudgeon, jun., Broomhouse, Dunbar; comfrey roots, Mrs. Coates, Mornington House, Clifton, Bristol; and a sample of the manure, called guano, from South America, exhibited by Messrs. Banks & Son, Haddington.

A fine bull, which has carried off prizes at almost every exhibition where it has appeared, and supposed by many good judges to be the finest bull exhibited on this occasion, belonging to Mr. Thomas Forrest, of Stretton, near Warrington, was not allowed to compete, on account of the regulations of the society, he being considered in too high condition for immediate use, although the judges considered him a fine animal, and highly commended him as such.

Mr. Simpson's bull gained the first premium of 100*l*., the sire and dam of which was held by Mr. Walker, Ferrygate. The Leicester tup, belonging to the Duke of Buccleuch, was from an ewe purchased also from Mr. Walker, at the society's show at Stirling. Lord Haddington's five steers, one year old, were sold for 100gs., and the two Angusshire sold at 90*l*. Sir John Hall's pair of West Highlanders were sold for 70*l*. The following is the opinion expressed by the judges of Mr. Hume's stock:—No. 2. Steer and heifer, belonging to P. H. Hume, Esq., (Lawfield by Dunbar,) possessing particular merit—they are the best among the extra cattle. Mr. Hume's steer and heifer were by Chieftain, which gained the society's premium at Glasgow, in 1838, by an Aberdeen cow. Chieftain was purchased by Mr. Hume from Mr. Walker when a calf. The lot were sold at 70gs.

A pair of steers, competing in class 15, was sold by Mr. Maddison, Wandon, for 90gs., to Mr. Brown, Sunderland.

GRAND BANQUET ON THURSDAY EVENING.

Nearly two thousand gentlemen sat down shortly after five o'clock, the chair being filled by his Grace the Duke of Richmond, the Most Noble the Marquis of Tweeddale officiating as croupier. In the vicinity of the chairman we noticed the following distinguished individuals: — The Mayor of Berwick-upon-Tweed, the Duke of Roxburghe, Lord Ossulston, Dr. Gilly, Sir David Milne, George Baillie, Esq., jun., the Duke of Buccleuch, the Earl of Courtown, Lord John Scott, Lord Frederick Fitzclarence, &c., &c. In the vicinity of the croupier sat Sir David Baird, Sir D. Kinloch, Sir E. Colbrooke, Lord Howick, the Earl of Buchan, the High Sheriff, Lord Templeman, the Hon. Henry Scott, Sir H. P. H. Campbell, Sir John Hall, Sir John Pringle, W. Burn Calender, Esq., William Shaw, Esq., a member of the council and one of the deputation from the Royal Agricultural Society of England, &c., &c. Shortly after six o'clock, and just before the substantial part of the entertainment had been disposed of, the ladies began to enter the gallery, and were received with loud and reiterated cheering. The chaplain of the society, the Rev. Mr. Grant, of Leith, having been called upon, said grace before and after dinner.

The Chairman proposed the following toasts in succession, which were drank with all the honours: —"Our Sovereign Lady Queen Victoria," "The Queen Dowager and the rest of the Royal Family," "Prince Albert and the Princess Royal of England," "The Army and Navy," coupled with the health of those who have served in the East India Company, both afloat and on shore, *(Cheers,)* "The Established Churches of the United Kingdom."

The Chairman. I now rise to propose that you fill your glasses, and drink prosperity to the Highland and Agricultural Society of Scotland—*(applause)*—and I trust you will permit me to say, that there never has, since the first formation of this society, been an exhibition which has exceeded in number that which we witnessed this morning in the show yard. *(Cheers.)* Most of you are better judges than I am of the merits of the different descriptions of stock, but I beg to offer my humble opinion that the show contained many animals of very great merit, and that the whole did very great credit to the liberal exhibitors. *(Cheers.)* When I look around me and see so numerous and respectable a meeting of land-owners and land-occupiers, from each side of the border, I feel that I would not be justified in trespassing long upon your attention, because I believe that your presence here to-day proves that you entirely concur in the objects of this society—*(cheers)*—and that you are determined to give us your most valuable support. *(Applause.)* The Highland Society was formed for the purpose of being of advantage to Scotland, and I leave it to you to say whether or not it has entirely succeeded—*(applause)*—by the support which it has given to numerous farmers' clubs established in every district of the country. These societies have been formed, and they give great facility to practical men for discussing questions with their neighbours relating to the cultivation of the soil in different districts. *(Applause.)* The premiums which have been given, have excited a laudable feeling amongst farmers and breeders of stock in various parts of the country, as was proved by the exhibition of this morning. *(Applause.)* The premiums you have given have led scientific men to turn their attention to the art and science of culture amd agriculture. *(Cheers.)* They have also turned their attention to a most important branch—that of the chemical nature of soils and manures. They have also encouraged a better and more efficient draining of the land; and our implements of husbandry have been much improved within the last few years. But, gentlemen, the Highland Society may also claim credit for having converted large tracts of marshy ground into cultivated land, and barren wastes into fruitful fields. *(Loud cheers.)* I believe, also, it may lay some claim to having given a stimulus which has led to the better cultivation of the soil. *(Cheers.)* But at the risk of repeating that which I stated here last night, I think the Committee have carried into execution what in my opinion is even of far greater importance—they have introduced friendship—and have brought together the land-owners and land-occupiers of the country, not to discuss party feelings or party opinions, but to discuss their mutual interests, and, above all, to co-operate together in any measure which may increase the comfort, and ameliorate the condition of that valuable class of men, the agricultural labourers of the country. *(Cheers.)* In doing this they have cemented that bond of union between them which cannot be loosened—which cannot be separated without danger to the best interests of the country. *(Loud cheers.)* The Highland Society have shown an example which has been followed in England and in Ireland, where societies have been established for similar objects; and, I believe, though I may be singular in expressing that opinion, that by the exertions of these societies spread, I am happy to say, over the whole face of the United Kingdom, however great may have been the improvements that have taken place during the last fifty years, we may hope, by the exertions of these societies, as I have said, supported by the landlords, and by an intelligent and respectable tenantry, with the aid of science to make our progress much more rapid still. *(Loud cheers.)* Thus shall we promote the cause of agriculture—that great branch of national industry, upon which is based the prosperity of this empire, the happiness of the people. *(Cheers.)* Gentlemen, I call upon you to drink, with all the honours, prosperity to "The Highland Society of Scotland."—Drank with three times three.

The Marquis of Tweeddale, croupier, proposed the health of the Duke of Richmond, the President of the Highland and Agricultural Society of Scotland. *(Loud cheers.)* The toast was received with the greatest enthusiasm.

The Duke of Richmond rose to reply, and said, with evident emotion—Gentlemen, I assure you that I feel deeply when I rise to express my deep sense of gratitude for this kind and warm, I may say enthusiastic reception *(cheers.)* I know from experience how difficult it is adequately to express such feelings: but I may be allowed to say how highly I value the good opinion of the farmers of this country *(Great cheering.)* It has always given me the utmost pleasure to meet the tenantry of the country. And I will say, that I never had the misfortune of meeting with any of them without being received on terms of respect and friendship *(Cheers.)* And I trust that my conduct, in supporting the cause of agriculture, may never lead them to regret the confidence they have reposed in me. My noble friend alluded to a particular period; but he spoke as an old friend. You are not to believe all he says *(a laugh;)* he spoke in the warmth of a friendship cemented by the lustre of those actions which cast glory on the British arms *(Great cheering.)* I am not one of those who support the agriculture of the country because I happened to be identified with its interests *(Loud cheers.)* But I support the agriculture of the country because I believe upon it is based the prosperity of all other branches of national industry *(Great cheering.)* As a landlord I can say that I have never recommended a tenant to do with his land that which I would not do with my own *(Cheers.)* I think a landlord is bound to do his duty to his tenantry. I have no wish to hurt the feelings of those who may disagree with me in opinion; but I say I would rather cut off my hand than let a farm by auction. (The noble Duke delivered this sentiment with an elevation of the voice which had a most electrical effect upon the company. After a moment's pause one peal of tremendous cheering burst forth, which was protracted for an unprecedented length of time.) Putting confidence in those who value it, continued the noble Duke, I give the land to the tenant if he thinks it worth his while (*Cheers.*) Having heard from me more of myself than I had at all intended, allow me to conclude by expressing a hope that your fields may teem with abundance, that your homes may be filled with every comfort, and that you may enjoy lasting felicity (*Cheers.*)

The Noble CHAIRMAN, after a short interval, again rose to propose the toast of "The Mayor and Corporation of Berwick."

The MAYOR returned thanks on the part of himself and the Corporation in an appropriate address.

His Grace the DUKE of BUCCLEUCH then proposed "The Duke of Roxburghe, Chairman, and the Local Committee," and thanks to them for the arrangements for the success of the Meeting, and the comfort of the assemblage.

His grace the Duke of ROXBURGHE returned thanks, and proposed "The Marquis of Tweeddale their croupier, one of the Vice-Presidents of the Society."

The CROUPIER said he felt extremely grateful to his noble friend for having proposed his health in the kind manner in which he had done, and for the manner in which it had been received. He went on to observe that although those from the other side of the Border who now heard him were present at the meeting at Aberdeen last year, yet he was sure they would take the same interest in the subjects which he was about to refer as those who had not been present (*Cheers.*) At that meeting one of the subjects which attracted particular attention was the comparative value of ploughs in different parts of the country. A proposal was made, that an exhibition should take place on the day following the show, to try and ascertain whether certain new ploughs would bear a comparison with those which had been in use in Scotland for the last 60 or 70 years. They were told they were in the dark upon this point, and certainly some improvement might have been made; but it was strange that the same mechanical principle tried as it could best be tried, not upon 200 or 300 yards, but by putting the ploughs supposed to be superior to the others upon a constant year's work—subjecting them to all the variations of the seasons, so that no mistake might be made, and it turned out that these ploughs of their own country were of more service than those which were opposed to them, (*cheers*) and were every way more useful in their own country, from their strength and durability, and cheaper to work than the others which were tried in the experiment. He had no doubt that the Highland and Agricultural Society would take that subject up, and treat it in a more extensive and satisfactory manner (*Cheers.*) The next subject to which he was going to refer—and he trusted it would be of advantage not only to the landlords but to the tenantry—had been alluded to by his noble friend the Duke of Richmond; he alluded to one of the greatest improvements carried on at the present day—that of draining, which was pursued on both sides of the Tweed with success. It used to be supposed that the only means of making wet land fertile, was by the application of hot lime to dry it; but since the introduction of the system of draining, they had greatly given up the practice of liming the land. He (the noble Croupier) had for the last two years had his wheat destroyed by the lime. A great many gentlemen and farmers had asked him if he wished to do a service to his country, to bring this matter before the Highland Society. He himself had lost several hundred pounds by applying lime in the treatment of wet land, the same as to dry, and a friend of his had told him he had lost to the extent of £2,000 by this practice. Now, if they could come to some practical conclusion upon this point, it would be of the greatest service to the country. The noble marquis then entered into some explanations upon this subject, the purport of which was (as nearly as it could be understood, under the difficulty which was occasionally experienced in catching his expressions) that under the old system the application of hot lime, by decomposing the vegetable matter, produced an advantageous effect upon wet land; but recently, the result of his experience was, that the application of the lime to such lands, after draining, so scalded them as to cause an almost total waste of the expenditure; but he found that by applying compost to poor land after draining, the advantages of the old system came in full operation. He made these observations because he knew there were a great number of persons present from different agricultural districts; and he knew that unless they made an effort to bring the subject under discussion it would fall to the ground. He wished to impress upon them that it was not only for their own interest, but it was for the advantage of the agriculturist on both sides of the Tweed, that these subjects should be considered; and not only that, but he thought they were bound to do all in their power to produce the greatest quantity of food, so that the consumer might have it at the lowest possible price (*Great applause.*) He hoped they would excuse him for detaining them so long; and would always do his duty in bringing these matters before the Society.

The noble MARQUIS again rose, and in a few complimentary remaks, proposed "Mr. Lindsey Carnegie, and the Deputation of the Directors of the Society."

Mr. L. CARNEGIE proposed the Duke of Buccleuch, and the Lord-Lieutenant of the counties connected with the meeting, including the Duke of Roxburghe and the Duke of Northumberland (*Great cheering.*)

The VICE-CHAIRMAN returned thanks. He apologised for some of the other judges not returning thanks, which was owing to their diffidence, not having so often acted in that capacity as he had done. He, for one, had been very much struck by the great additional number of stock shewn on the present occasion; and having been a judge for the last twenty years, he could safely say that he never saw so many good animals upon any occasion as he had seen upon the present. He did not confine himself to those kinds of animals that are to be found upon the borders of Scotland; but he was really proud to say that the recollection of the Highland Society having met at Inverness and Aberdeen in former years had induced many Highlanders to send stock to the present show, thus proving that they had not forgot the advantages of the meetings at those places. (*Great cheering*). The noble Marquis then made some remarks in illustration of the difficulty of the duties devolving upon the judges, and concluded by proposing "The Ladies of Berwick."

The CHAIRMAN then rose to propose "The Royal Agricultural Society of England and the Deputation from it." He took a deep interest in that Society, having had the honour of presiding at one of its great meetings; and the reason he felt that interest in it, which induced him to recommend it to the landlords and farmers, was because he had seen the great advantage which had resulted in Scotland from the operations of the Highland Society. The Agricultural Society of England was formed upon the same principles. They had agreed to send a deputation to acknowledge the Highland Society as their parent —and to acknowledge that the farmers of Scotland had first set them an example which they had carried out, That society had, like themselves, its annual meetings—it travelled from place to place—and it gave rewards for the best stock. Its members had also thought it necessary to establish a journal, which was a credit to every member of the society. After some further remarks, his grace concluded by requesting them to drink with all the honours, "Prosperity to the Royal Agricultural Society of England"—many thanks to them for sending the deputation: and he (the Chairman) might be permitted to say that they should always be most happy to co-operate with them. (Drunk with all the honours.)

Mr. Shaw (one of the deputation from the Royal English Agricultural Society) rose and was received with great applause. He said he regretted that some other member of the deputation was not present who would have been able to address that meeting in a manner more appropriate, and better calculated to return in fit terms the most grateful thanks of the council and members of the Royal Agricultural Society of England for the marks of approbation which had been conferred upon them. But he should ill discharge his duty as a member of the council of that society if he longer occupied their time without assuring them that there was nothing more grateful to them than to find that the Highland Society had thought them worthy of those marks of its approbation. They had at all times the highest gratification in receiving the approbation of any society with similar objects; but there were circumstances which tended to make them feel warmly the approbation of the Highland Society; for when their own society was in embryo, they received the greatest assistance from the directors of the Highland Society and their able secretary, Sir Charles Gordon *(cheers)*. The noble Duke had alluded to circumstances connected with this meeting on the Borders, which might tend to unite the agriculturists on both sides of the Tweed; he had alluded to the name of the Duke of Northumberland as having been mentioned at the Highland Society's meeting for the first time; but he (Mr. Shaw) would mention another circumstance which would equally contribute to unite the Highland Society with the English Agricultural Society. He alluded to the fact that there sat in the chair on the present occasion a noble Duke who had already been President of the Royal Agricultural Society of England. *(Great cheering)*. And he (Mr. Shaw) could attest that in that capacity the nobleman to whom he alluded had entered into all the minutiæ of business with the same zeal and the same spirit which he had displayed that evening. Allusion had been made to the benefits resulting from the contributions to their journal. He had been somewhat surprised that the Highland Society had not adopted the same course with their journal. He knew that there was sufficient practical ability, and he felt satisfied that if that course was adopted—and if in addition to the theoretical features of the Highland Society's journal, the farmers of Scotland would put their pens to paper and contribute to its pages, they would do more to advance the interests of practical agriculture than by any other method which could be adopted. *(Cheers.)* Another subject to which he wished to direct particular attention was that of the establishment of Farmers' Clubs. The distinction between Farmers' Clubs and Agricultural Societies was that the former bore the same relation to the farmer and yielded him the same advantages as did Mechanics' Institutions to the operative. The farmers of Scotland had the same intelligence, the same strength of mind as their southern brethren, and all they wanted was to come together to be of advantage; and he was sure that nothing would gratify the agriculturists of England more than to know that the union had been so cemented. *(Great applause.)*

The Noble Chairman then alluded (in terms which were not very distinctly heard at the reporters' seat) to the establishment of a society in Ireland similar to that of the Agricultural societies of England and Scotland, and mentioned that that society had sent a large deputation to the present meeting. He begged that they would fill a bumper to the health of the Royal Agricultural Improvement Society of Ireland, and the deputation from it. (Drunk with all the honours.)

The Earl of Courtown thanked the meeting for the honour they had done the deputation. After some further remarks, his lordship concluded by calling on Mr. Bullen the secretary.

Mr. E. Bullen, Secretary to the Royal Agricultural Improvement Society of Ireland, then rose and said, he felt gratified at having his humble name associated with the proceedings of that important meeting, and he begged to return his heartfelt thanks and gratitude for the reception they had met on the occasion *(cheers)*. He did so, however, upon higher grounds. He was the humble instrument of a body, deputed to lay the grateful acknowledgements of an entire people before the society, and to thank them for the great good they had done, and the noble example they had set, not only to Ireland, but to the civilised world *(great cheering)*. The Highland Society of Scotland were clearly entitled to those thanks, for the progress they had made, and the vast assistance they had afforded in the noble career of agricultural improvement. They might well be called the pioneers of modern agriculture, struggling with the numerous difficulties that surrounded them, and they now reap the noble reward that attends their valuable exertions *(applause)*. After a long interval England followed their example, and after a longer still, as his presence here that day could testify, Ireland also entered into the contest. They were the youngest sister of the three, and he was happy to inform them that they had a most promising and thriving offspring *(laughter)*. Their country was most peculiarly adapted to objects of the kind. With a climate mild and genial in the extreme, and a rich soil as the bountiful munificence of nature could bestow, they courted the cultivation of the land. Her sons too, hardy and numerous—their country's pride—supplied that great ingredient in agricultural prosperity, the labour of the field. Traversed by canals and navigable rivers from sea to centre, and with a never-failing market for her produce, Ireland was ready to pour the vast resources of her bosom, to supply the wants of her more wealthy sister; her granary in times of peace, as she had ever been her right hand in the days of danger and of war *(cheers)*. He was happy to inform them that their exertions had been hitherto attended with unparalleled success. Though only a few months in existence, they had vested nearly five thousand pounds in the funds, and secured an annual revenue of one thousand a year. They were already in communication with no less than forty-six local societies, and had given between three and four hundred pounds in prizes among them this very year. They proposed holding their first great annual cattle show early next year, at which he trusted he would see those now around him in attendance; at all events he took upon himself to promise them a cordial and a warm reception. By the strange combination of circumstances that had united to favour their views, and the judicious exertions of one individual, who was unavoidably absent (Mr. Purcell), they had succeeded in uniting all creeds and classes *(cheers)*. The nobility and proprietors had come forward nobly, and the gentry were following their example. Considering the conflicting elements with which they had to contend, and to which he need not further allude, their success had been as extraordinary as it was gratifying, and much of the difficulties have been lately removed by the improved habits, the temperance and morality of the people *(loud cheers)*. Every thing, in fact, conspired to advance the cause, and amongst the rest the kind way in which they had been received by the members of this society. He would not however be doing justice to his feelings, if he did not take this opportunity of expressing the deep obligations of the country to their able and efficient Secretary, Sir Charles Gordon, for the promptitude and kindness with which he responded to their call, and aided by his presence and advice, their first proceedings. It was to him, indeed, they were chiefly indebted for those judicious arrangements which had hitherto been attended with so much success, and which, he trusted, combined with the improved moral habits of the people, and the happy combination of circumstances, would guide his countrymen in the course thus pointed out to them, and make Ireland, what she ought to be, an emblem of happiness, prosperity, and peace *(loud and continued cheering)*.

The next toasts upon the list were—"The Duke of Sutherland, the late President of the Society," "The Recorder, the Sheriff and Magistrates of Berwick-upon-Tweed," which was acknowledged by Robert Ingham, Esq., and the "Duchess of Richmond," for which his Grace returned thanks, concluding by proposing "Agriculture, Manufactures, and Commerce," the interests of which, he said, were united. His Grace also stated that the absence of Lord Elcho, to whom that toast had been assigned, was unavoidably occasioned by the sudden illness of a member of the noble lord's family.

Lord HOWICK next proposed "His Grace the Duke of Wellington, and his brave companions in arms." All the honours.

The CHAIRMAN then gave "The Members for the Counties and Boroughs connected with the meeting."

Lord OSSULSTON returned thanks.

Sir CHARLES GORDON, Secretary to the Society, then attempted to read the list of premiums, as given elsewhere, but was obliged to leave off.

Several other toasts followed, but at this time a large proportion of the company rose from their seats to leave the room, and in consequence of the noise and confusion occasioned thereby, scarcely a word which fell from the speakers was heard within a short distance of the chair. "Order" was repeatedly called, but the impatience of the majority of the company to depart could not be restrained. After some time spent in this way, some degree of order was restored, on its being found that

The Rev. Dr. GILLY proposed "The Peasantry."

The remaining toasts in the list were summarily disposed of by the Chairman, after which the company dispersed.

HOLYWELL FARMING SOCIETY.

The annual show of stock, the prize ploughing, and the meeting of this most excellent society, was held at Holywell, on Friday, October 8. The shew and attendance were superior to any former year.

Mr. Scotson, of Toxteth Park, and Mr. Slingsby, of Liverpool, were judges of stock; Mr. Simon, of Greenfield, and Mr. Lloyd, of Llanasa, were judges of crops and turnips; and Mr. Lloyd, and Mr. Williams, of Celyn, of ploughing.

THE DINNER.

At four o'clock, about 90 gentlemen sat down to a good substantial dinner, the Hon. E. M. Lloyd Mostyn, M.P., in the chair.

The usual loyal and complimentary toasts were drunk.

The CHAIRMAN gave "prosperity to the Holywell Farming Society." He was old enough to recollect when agriculture was at a very low ebb in the county of Flint—when in fact there was not a pair-horse plough in the county; but now pair-horse ploughing prevailed all over the county; and if that was the only advantage gained by the influence of such societies as the present, it would be a sufficient reason for giving them every support. *(Hear.)* But when he looked at the different system of farming that had been introduced, and particularly at the growing prevalence of the turnip system, he was convinced it was of the first importance that this and other similar societies should be encouraged. *(Hear.)* He then drew their attention to the late meeting of the British Society at Liverpool, where the leading stock in the kingdom was shewn, and the best systems of agriculture were discussed; and all who went there had profited by their visit. At that meeting a great deal had been said on the subject of drainage; and it was rightly held, that unless the land was drained, it was useless to expend pains, capital, and manure upon it; as they were in great measure thrown away, unless the moisture was carried off. *(Hear.)* He knew no man who had drained more or with better success than his hon. friend, Sir R. Bulkeley, who was a large landed proprietor, and who devoted his means, time, attention, and abilities to farming. *(Hear.)* The nature of his estate in Anglesey, required that draining should be carried on to a great extent; and as he had done a great deal in that line, he hoped they should hear his opinions upon it. The hon. Chairman then went on to say, that at the late Anglesey meeting, this subject had been much discussed also, and a statement of the expence published in the "Carnarvon Herald" of the 25th September. If Sir R. Bulkeley could give them information on this point, he should be very glad to hear it; but of one thing, he (Mr. M.) was quite satisfied, that unless draining was especially attended to, and conducted upon good principles, very little improvement would, or could be made in the tillage of land. *(Hear.)* One other subject upon which he wished to say a few words, was the growth of wheat on poor lands. He appealed to them, whether or not in many districts they were not growing wheat to a very great disadvantage—particularly on the light cold soils. *(Hear.)* In fact, a great deal of money was lost by this sort of farming. *(Hear.)* He had a calculation in his hand made by a practical agriculturist residing in Whitford, which clearly proved this, and was made on practical data. He then went through the calculations, which shewed that on land such as he had described, the cost of culture, housing, thrashing,

&c., &c., amounted to 9*l.* 18s. 9d.; and the produce, three hobbitts with the straw, was not worth more than 3*l.* 10s., making a loss on the crop, of more than 6*l.*; whilst by growing barley a small profit might have been realised. He thought that it would be well if the farmers would look more narrowly into the cultivation of wheat on light lands. Unless it could be done to a profit, it had better not be done at all. (*Hear.*) The next subject to which he wished to call their attention, was the use of gorse for horses. (*Hear.*) He had used it on his farm with great success; and he believed that by so doing, he effected a saving of half compared with the ordinary food. He also had tried it with cows, and they kept condition very well upon it. He thought the subject worthy their attention, as there were some farms where it was most valuable to be able to get good crops of gorse. (*Hear.*)

Sir Richard Bulkeley said it appeared to him that this society, like many similar ones, had one fault—it gave too much encouragement to the improvement of stock, whilst the improved cultivation of land was not sufficiently attended to. (*Hear, hear.*) He did not undervalue improved stock, and particularly to a county like Flint, which had lost the indigenous breeds; but it appeared to him that in running after this undoubted good, they lost sight of one of greater importance. (*Hear.*) He hoped the Flintshire farmers would pardon him, if he did not indulge in the language of fulsome compliment; for he felt it his duty to say, and he did say it with all well meant sincerity, that he knew no county which required more improvement as respected agricultural operations, and he hoped the hint he had given would not be thrown away upon this society, nor upon the practical farmer. (*Hear.*) They had heard some observations from his hon. friend the chairman, on the subject of growing wheat. He could only add, that to attempt to grow wheat on such soils as had been alluded to, was money thrown away. Oats, on such soils, would answer infinitely better than wheat. He was aware that the great difficulty in effecting improvements and change of system, was in combating the prejudices of farmers, particularly those who were averse to extensive and expensive improvements; but there were improvements which all might easily attain—for instance, he would advise them to adopt the rotation of crops, which had been proved to be beneficial wherever it had been tried. With respect to draining, on which he had been called to say something, he must decline the challenge, lest he misled them. He could not tell them the expence, therefore he would say nothing about it. But still he was a great advocate for thorough-draining—such as the Deanston system—which nearly all Scotland was now undergoing. One observation he had however now to make on this point—that if land was to be thoroughly and effectually drained, it could not be expected that the tenant shall bear the expence: he must have the assistance of the landlord, whose property would be improved by it. (*Hear.*) The Deanston system was brought into operation by a manufacturer of great mechanical genuis; and the drains were made of solid rubble stones: where there was a good fall, he thought it would thoroughly succeed; but on flat land, he thought a tile would be required. (*Hear.*) What the expense of this system was, he did not know.

The Chairman then proposed the health of the Secretary, and said that no society had such valuable aid as he had rendered to this. (*Loud cheers.*)

Mr. Whitley returned thanks, and pledged himself to still exert himself for the benefit of the society. It was essential to the utility of the institution, that the faults of management should be as few as possible; and whatever suggestions were made, should have every attention. (*Hear.*)

LANCASTER AGRICULTURAL SOCIETY.

The annual meeting of this society was held on the 11th October. The show of stock was not so large as that at several meetings, nor was the quality in general so good. The young horses and bulls were, however, superior to those shown on former years. A very splendid bull, belonging to Mr. Almond, of Standish, excited general admiration. Several agricultural implements were also exhibited in the field, amongst which were some very improved machines for cutting straw, so as to adapt it for food. Two horse hoes, of a new and improved construction, prepared under the superintendence of Mr. Binns, appeared worthy of remark. The knives are so arranged that they undercut the ground between the rows, and, together with the teeth, thoroughly pulverise the soil. A very large hay and stubble rake, presented by J. W. Patten, Esq., was also shown.

THE DINNER.

Soon after three o'clock, the members of the society and their friends sat down to dinner in the room under the assembly-room. J. Wilson Patten, Esq., M.P., took the chair. Among the company were Thomas Greene, Esq., M.P.; T. Clifton, Esq., Lytham; G. Marton, Esq. M.P.; John Bond, Esq.; W. Lamb, Esq., of Hay Carr; F. O'Byrne, Esq.;—Swainson, Esq., of Halton Hall; E. Dawson, Esq., of Aldcliffe Hall; W. Robinson, Esq.; — Foster, Esq., M.P. for Berwick; Thomas Rawsthorne, Esq.; R. Greene Bradley, Esq.: — Stickney, Esq.; E. D. Salisbury, Esq.; Dr. H. Lane; S. E. Bolden, Esq.; and a number of other gentlemen of Lancaster and neighbourhood.

The usual loyal and complimentary toasts were drank.

The Chairman, in proposing "Prosperity to the Lancaster Agricultural Society," said that he had seen that, influenced by these societies, the farmers were gradually introducing improvements, and the spirit of competition being thus excited, farther and more extensive improvements might be expected. Whilst great attention had been paid to the breeding of stock, he thought that comparatively very little had been given to improvements in the manner of cultivating the land. Still he believed that improvements were going on in that department of agriculture; there had never been so much draining as during the past year. He knew one farm in the south of the county, where more draining had been effected than, he believed, in any one farm in the United Kingdom. The farm consisted of 75 acres, and 350 miles of draining had been made upon it. He could venture to express an opinion on the crops of turnips, which, notwithstanding the wet summer, had never been known so large before. At the Liverpool Agricultural Meeting, some fields were reported as producing 38 or 39 tons per acre. This was a source of encouragement, under the very many bad seasons which they had suffered from. If the subject of the great advantage of turnip crops was more taken up, it would be of the greatest advantage to the agriculture of the country. They were not to expect that tenants would make improvements without the assistance of the landlords. There were a great many instances of landowners who exert themselves in this manner, and, as one most conspicuous, he would mention his friend Mr. Clifton, in connexion with the Lytham Association, over which he was the president.

Mr. Binns then read the following report :—

"Your inspectors were highly gratified with the good management and neat order in which they found the various farms under inspection; and they are happy in observing that, generally speaking, an improvement is gradually taking place throughout the district under survey. The farms for which claims were made for the premium, were, with one exception, in excellent order. The one to which we award the premium is in the occupation of William Wilson, of Ranes Hall, in Sedgwick, Westmoreland; the management and husbandry of which is superior to any we have ever before seen. The fences, gates, farm-yard and farm-buildings, are in excellent order, and the rotation of crops most judicious. The land is free from weeds, in a high state of cultivation, and is laid down to grass with suitable seeds. The particulars and rotation will be found in his report."

MR. WILSON'S STATEMENT.

A statement of improvements, and system of husbandry practised by me, at Ranes Hall, in Sedgwick, containing 105 statute acres, which I have occupied eight years. The first year I bought 500 bushels of lime, and applied it in the raw state as top-dressing to pasture land; and in the same year I bought 50 tons of manure and 100 bushels of lime, and applied it in compost for barley. The second year, 500 bushels of lime in compost, one half on the grass ground, and the other half for barley. In this year, also, about 50 tons of manure. The third year, 550 bushels of lime applied as before, and about 60 tons of manure. The fourth year, 350 bushels of lime in compost, applied as before, and about 70 tons of manure. In each of the succeeding years I have bought 200 bushels of lime, and about 80 tons of manure, and applied it as before. All the land that I plough out of lea, I green crop and summer fallow the year following. After the green crop and summer fallow, I sow down with barley and a proper quantity of clover and grass seeds.

A statement of improvements made solely at my own expense :—

	£	s.	d.
1st year.—Trenching the sides of old fences, and dikeing up with sod and stone, 64 roods, at 2s. per rood	6	8	0
2d year.—66 roods of sod and stone dike, at 2s. per rood	6	12	0
2d year.—73 roods of sod and stone dike, at 2s. 6d. per rood	9	2	6
3d year.—60 roods of sod and stone dike, at 1s. 8d. per rood	5	0	0
4th year.—107 roods of sod and stone dike, at 2s. per rood	10	14	0
5th year.—Grubbing waste land and draining	6	10	6
6th year.—Trenching and dikeing 39 roods of fence, some parts of it 11 wide and 2 yds. deep, of stones, at 7s. per rood	13	13	0
7th year.—40 roods of dikeing, at 1s. 6d. per rood	3	0	0
Improvements made in farm-yard	2	0	0
	£62	19	6

⁂ In the improvements in buildings made by the landlord, the tenant carts all the materials free of expense.

I have the following proportion of green and white crops :—

	A.	R.	P.
Oats	17	2	0
Barley	15	2	0
Turnips	11	0	30
Potatoes	2	1	0
Vetches	3	2	0
Mowing land, (9a. of which is clover)	15	0	0
Pasture land	38	0	0
Farm-yard, orchard, garden, &c.	2	0	10
	105	0	0

Ranes Hall, Oct. 4. WILLIAM WILSON.

The stock on this farm is as follows :—

Milch Cows	12
Bulls	1
Year-old Heifer	5
Two-years-old, ditto	5
Calves	5
Work Horses	4
Year-old colt	1
Two years old Colt	1
White-faced Sheep	25
Store Pigs	2

"The next farm in point of good husbandry is in the occupation of Obadiah Burrow, called Heversham Hall Farm, in which great improvements have been made. The rotation of crops is judicious, and the land free from weeds. The management is on the whole meritorious, and does credit to the farmer, but the hedges and other parts of the husbandry are not equal to the first mentioned farm. As regards the other claimant, Mr. John Ellison, of Sedgwick, we recommend that before he makes another claim for the best cultivated farm, his land should not contain so many weeds, and that his fences should be in better order.

STORE CATTLE.—(2 CLAIMANTS.)

"This premium we award to Mr. John Ellison, of Sedgwick. His stock of cattle, though small, is of a superior description. His stock of sheep is large and very good. The particulars are given in his report.

TURNIPS.—(5 CLAIMANTS.)

"We award this premium to Mr. John Scott, of Sedgwick, whose turnips were free from weeds, regularly thinned, and the plants well formed and weighty. The remainder of the claimants possess considerable merit, their crops being kept clean, with the exception of one which was the heaviest crop, and to which we should have awarded the premium had it been properly cleaned.

"JOHN BATESON,
"THOMAS WINDER,
"JOHN PRITT."

Chambers' House, Sedgwick.—Statute acres, 96.—Turnips, 9 acres.

SHORT HORNS.

Breeding Cows	7
Two-year-old Heifers	4
Yearling Heifers	7
Bullock	1
Bull Calf	1
Calves	3
Work Horses	4
Pony	1
Breeding Ewes	20
Tups	3
Weathers and Gimmers feeding	30
Lambs	15
Store Pigs	3
Breeding Sow	1

Oct. 8, 1841. JOHN ELLISON.

A long conversation here ensued, commenced by Mr. Jackson, of Berwick, who stated that, in judging of the stock on a farm, the cattle summered out ought not to be taken into consideration.

Mr. Ellison, of Sizergh, contended that they ought. He said it was of far more importance to be able to keep the cattle through the winter. It did not so much matter what a man could keep in summer, but what he could grow enough of turnips, straw, &c., to keep them through the winter.

The Chairman said that the subject was worthy of consideration, and should be referred to the committee. The Royal Agricultural Society was about to publish a book for the purpose of keeping an account what stock a farmer has had on his farm all the year through.

Mr. Binns then read the following report of the judges of stock, with the list of premiums.

CLASS 1.

1.—To the tenant and occupier of a farm, not less than forty statute acres, who shall have made the greatest improvement thereon within the last five years, or who shall have made the greatest progress towards bringing the same to the best general state of cultivation, according to the nature and quality of the land, and in the neatest and most exact order as to fences, water-courses, roads, gates, stiles, farm-yard, &c., and the land laid down and drained in the best manner and cleanest from weeds.—A silver cup, or five sovereigns. Mr. Wm. Wilson. Three competitors.

2.—To the person who shall keep, during the summer, in yards or houses, night and day, not fewer than 6 cattle of two years old or upwards, on cut green food, and without their being at any time allowed to pasture.—A silver cup, or five sovereigns. No competitors.

3.—To the person who shall raise the best crop of turnips, to be wholly consumed on the premises, according to the nature and quality of the land and size of the farm, to be thoroughly cleaned from weeds, and equally thinned; the quantity not to be less than two statute acres: all the turnips on the farm are to be shown to the Inspectors, from which they must form their decision.—A silver cup, or three sovereigns. Mr. John Scott, of Sedgwick. Five competitors.

4.—To the person who shall produce to the Inspectors the best general stock of store cattle, including horses, cows, pigs, sheep, &c.; according to the extent and quality of the farm, not less than forty statute acres.—A silver cup, or five sovereigns. Mr. John Ellison, of Sedgwick. Two competitors.

We are compelled to omit the list of cattle prizes.

Mr. Green said, there was one topic on which he would make a few remarks, and to which he was sorry he had so often to advert. Out of fourteen premiums given by that society, only three had been given for improvements in land, and all the rest for stock. There had been very great improvement in the quality of stock, resulting from the encouragement offered by agricultural societies; and he hoped that increasing the premiums for improvements in the cultivation of land, would stimulate the farmers, and produce a similar improvement in cultivation to what had been effected in stock.

Mr. Marton said, the population was increasing, and it was of the highest importance that the means of subsistence should proportionably increase. He, for one, thought that this country could produce sufficient for its own population, and that they ought to avoid, as much as possible, depending upon foreigners for food. There was an acknowledged want of work, but an improved system of cultivation would employ more labourers, and benefit the home market.

Mr. Ellison said, that at the Burton meeting there was much more competition than at Lancaster. There had been ten competitors for the prize of the best crop of turnips. He considered the cattle far superior to those shown that day. Mr. Fair might say that they were fully equal to their expectations, but if that was the case, their expectations were very small indeed. The Lancaster society had not prospered since they had altered the rules so as to prevent any one person from receiving more than one prize. It was not to be expected that, for the sake of winning one prize, he would bring his fine specimens of stock to show to the farmers. At the Kendal meeting, on Saturday last, there were fifteen competitors for the turnip prize. It was of the greatest importance to encourage the cultivation of turnips. The value of the crop, and the increased value of the manure were very great; and after turnips they could have fine clean crops of grain. He had got a fine and very valuable ram of the Duke of Richmond's breed, which he had purchased of Sir John Gerard, and he now produced a harder and more improved race of sheep. He would advise the breeders of sheep to procure a south ram, but they were to be sure to go to the very first breeders. He agreed with what Mr. Green had said, that the cultivation of the soil had not been improved so much as the quality of stock, but he thought that it originated from the system of short leases which prevailed in that part. However a farmer had improved his stock, he could take it all away when he left the farm, but it was not to be expected that he would expend money in the improvement of land, when they might be deprived of the benefit at the end of seven years. *(Applause.)*

The Chairman said, he quite agreed with what Mr. Ellison had said on the subject of long leases.

Mr. John Ellison, of Sedgwick, said three of the prizes given that day had been obtained by residents in his township, which only consisted of about 600 acres. He was sorry that the Lancashire farmers could not more successfully compete with the farmers of Westmoreland.

Mr. Jackson said, that the farmers of Westmoreland were much superior to those of Lancashire, and therefore the Lancashire farmers had not an equal chance. A large proportion of the land in that part of Lancashire was either rough moor land, or land lying under water. He thought with Mr. Greene, that more encouragement ought to be given to improvement in the cultivation of the land.

The Chairman said, that there were two subjects for discussion that evening. The first was—the insects most injurious to the crops of the agriculturist. He would proceed at once to call upon Mr. Stickney, who, he hoped, would give them the results of his experience on that subject.

Mr. Stickney, from Lincolnshire, (brother to Mrs. Ellis, the celebrated authoress), said, it was too late in the evening to enter fully into the subject, but he would be most happy to communicate anything which would benefit any gentleman present. There were many insects which hurt the farmers' crops, but he would confine his remarks to two kinds only. First, the slug, which was a very destructive insect; they had found the means to destroy it, which they did by the application of quick-lime to the land in moist weather. The grub was a much more formidable insect; salt and lime took no effect upon them, and he had even seen one frozen completely hard, and, when afterwards thawed, show itself quite alive. Providence had, however, provided a remedy in giving the rook, and he was glad that rookeries had been increased. A rook was examined which was killed when returning to its nest after feeding. and its bill was found to contain upwards of 30 grubs, which it had provided for its young. Two nests had been watched for some time, and it was found that they returned with food to the young ones 68 times during the day, and reckoning 33 grubs brought each time, 2,244 grubs would be destroyed in one day, to provide for the wants of one family of rooks. Including the food of the old birds, it was calculated that a family of rooks would destroy the grubs of two acres of ground.

Mr. Jackson wished to know something of the manner in which the "black-jack" could be destroyed. It was an insect which ravaged the crops of turnips about three years since.

Mr. Ellison recommended the refuse of gas works for that purpose. He said, that it was quite a mistake to suppose that rooks were injurious. They had nothing to do but to set a boy to watch for a short time after the time of sowing.

Dr. H. Lane said, that he had great pleasure in hearing the practical information which the gentlemen who had just addressed the meeting had given. From what he had read upon the subject, he was led to suppose that the insects they had been speaking of as the slug, the black-jack, and the wire-worm, were all the same insect, which appeared in different forms. The eggs of the black-beetle were deposited under the leaf of the plant, which, in process of time, were hatched, and in the caterpillar state were known by the name of the wire-worm. They afterwards advanced to the next state of their existence, and became black-beetles. Every attempt to remove the insect, in all its three different forms, had failed. It had been found that this beetle always flies in the opposite direction to the wind, and the inference was that they were able to smell their food at a great distance. He thought they might be prevented from entering a field, if the farmer would place some highly scented material round the field in which the turnips were sown. He thought with Mr. Ellison, that gas tar was very well adapted for that purpose. *(Applause.)*

Mr. R. Hinde said, he considered that the insects mentioned by Mr. Stickney and Dr. Lane, were totally different from the kind referred to by Mr. Jackson.

Mr. Ellison thought Mr. Hinde was correct. The black-jacks were a kind of black caterpillar, which destroyed a great many crops about three years ago.

Mr. Binns said, he had a few remarks to make upon the second subject for discussion—the training of young horses. He considered that the present system of breaking-in was very hurtful to the horse, and he thought that the training should begin when the horses were very young. He had to thank Mr. Patten, on behalf of the society, for the hay and stubble rake which he had presented to it.

Mr. Greene said, he thought the present system of breaking-in horses the very worst that could be adopted, but he wished to know what plan would be substituted.

Mr. Binns proposed that the training of the horse should begin when the animal was very young, and that it should be gradual. He would recommend that when foals, they should be accustomed to draw and carry very light weights. They ought to be treated with great gentleness, and be induced to love instead of fear their masters. This would render them more teachable, and fewer accidents would occur.

Dr. H. Lane said, that the custom of fastening the horse's head as near up to his chest as possible, during the time of breaking-in and afterwards, was most prejudicial. The effect of having the arm in a sling for a long time was well known—it became almost useless; just so with the horse's neck; the muscles of its neck were to a certain degree rendered useless by the operation. There was another question connected with the horse which he wished to have solved: how far was the custom of putting very heavy shoes on the horse's fore feet (to make it lift them better, and so communicate a round showy action) beneficial?

Mr. Harrison, surgeon, recommended that a premium should be offered for a treatise on the management of the cow and calf. He said, that great mismanagement and loss frequently occurred from ignorance on this subject. He knew of many cases where death had ensued from want of proper treatment.

LICHFIELD AGRICULTURAL SOCIETY.

The exhibition of stock and implements of husbandry, at the general annual meeting of this useful and improving society, was held at Lichfield, on Sept. 25.

The exhibition generally was regarded as superior both in point of number and quality to that of last year, and the show of stock, particularly the store cattle and sheep, received the warm recommendations of practical men. It was decidedly the best show ever seen at Lichfield. The bulls were particularly admired, and amongst them a thorough-bred Durham bull, the property of Sir R. Peel, attracted considerable attention. A bull belonging to Mr. Lakin was also greatly admired.

Among the implements of husbandry which formed part of the exhibition, a furrow presser with a drill attached, the invention of Mr. Bright, agent to Lord Hatherton, and the property of Mr. Chawner, the honorary secretary of the society, was a good deal noticed and approved of; as also was Mr. Blurton's "cheese turner."

The Judges were Mr. Wm. Higgins, Northampton; Mr. Rice, Cotton End, Northampton; and Mr. Umbers, Wappenbury, near Warwick.

THE DINNER.

Soon after four o' clock, about 140 noblemen, gentlemen, agriculturists, and members of the Yeomanry Cavalry, sat down to dinner, in the assembly room, at the George hotel.

Sir Francis Lawley, Bart. presided, supported by H. J. Pye, Esq., as vice-president. Amongst the noblemen and gentlemen who were likewise present at the dinner, and who attended the exhibition were—the right hon. Earl Talbot, Lord Lieutenant of the County, the right hon. the Earl of Lichfield, Viscount Ingestre, M. P., Lord Leveson, M. P., the hon. and rev. A. C. Talbot, E. Monckton, Esq., E. Grove, Esq., Captain Hawkes, M. P., Colonel Monckton, General Dyott, Captain Dyott, Captain Talbot, R. C. Chawner, Esq., Captain Majendie, Samuel Swinfen, Esq., T. S. Hellier, Esq., W. Hartropp, Esq , C. S. Forster, Esq., J. Forster, Esq., M. T. Bass, Esq., A. Griffiths, Esq., Thomas Chapman, Esq., John Yates, Esq., John Twigg, Esq., Wm. Princep, Esq., Harvey Wyatt, Esq., George Hartin, Esq., John Sherratt, Esq., Joseph Webb, Esq., Thomas Darling, Esq., Lieut. Roberts, John Owen, Esq., John Simpson, Esq., F. Willington, Esq., Captain Des Vœux, James Wyley, Esq., the Mayor of Lichfield, — Humber, Esq., — Stevens, Esq., Smith Muchall, Esq., William Jaggard, Esq., J. Stubbs, Esq., — Boothby, Esq., Francis Hamp, Esq., &c., &c., &c. The usual loyal toast were drunk.

The Chairman, on rising to give the next toast, was received with much applause. Sir Francis observed, that he was quite sure, from those plaudits, the company anticipated the toast which he was about to propose; and he felt assured, that if he could do justice to it the applause would be doubled. He would now give the health of a nobleman who lived in the hearts of the whole county, — (*cheers*,)— who, whether they considered him either in his public or private capacity, had always discharged every duty in the most admirable manner, and had thereby gained the love and affection of every individual who knew him. Of the noble lord's private worth he should not speak; and in his public capacity his merits were known and appreciated. He had repeatedly received the highest reward for the discharge of his public duties from every government under which he had served, whatever might have been its political character. (*Cheers.*) He (Sir F. Lawley) would, therefore, not make any further observations upon the toast, but would propose " the health of the Lord-Lieutenant of the County." (Drunk with loud cheering, Mr. Yates proposing " one cheer more for the farmer's friend," which was given with great enthusiasm.)

Earl Talbot, on rising to acknowledge the toast, was greeted with renewed cheers. His lordship said, that if he ever rose under feelings of embarrassment to return thanks for the toast which they had just so kindly received, it was upon that occasion. That he should, through a long life, have discharged his duties both as a private individual and as a public officer in such a manner as to have them thus publicly noticed, was indeed to him a source of much gratification,—(*cheers*,)—but to him alone the praise was not due, for throughout his official career, he had always been zealously supported both by the magistracy and yeomanry of the county. When placed in difficult and arduous circumstances, as he had often been, he had always been warmly supported by those gentlemen, and he felt assured that whatever difficulties he might have to encounter hereafter, he should on all occasions receive their cordial co-operation. He thanked them from his heart for the honour they had done him in drinking his health. (*Cheers.*)

The Chairman next gave " the Bishop and Clergy of the Diocese," which was drunk with applause,

Sir F. Lawley then observed that before the report of the Committee was read, and the rewards were presented to those labourers who had so meritoriously earned them, he would beg to propose the health of a gentleman to whom he thought not only that society, but the whole body of agriculturists of that part of the country, were under obligations; he alluded to their Secretary, Mr. Chawner. (*Cheers.*) He scarcely need tell the company assembled that Mr. Chawner was the originator of the Lichfield Agricultural Society, and had almost alone been the means of securing that prosperity to which they now saw the society rapidly advancing. He was convinced they would feel that he (Sir F. Lawley) had not estimated too highly the merits of their secretary, after they had heard the report which he now begged to call upon Mr. Chawner to read. (" The health of Mr. Chawner, hon. secretary" was then drunk with loud applause.)

R. C. Chawner, Esq., observed that he did not suppose it was possible that he could presume so far as to say that their respected Chairman was disorderly; but he thought he had reason to find fault with Sir Francis Lawley, for proposing his health at so early a period of the evening, and more especially for having given him much more credit than he deserved in carrying forward the objects of the society. He was quite sure that the credit was due more to the managing committee, many of whom had supported the establishment of the society with at least equal zeal, and had since worked with more assiduity than himself. He should therefore be sorry to have it supposed that he could arrogate to himself anything like exclusive credit. Before reading the report of the Committee, he would, with the permission of the company, make some remarks on the prospects of the society. A great deal had been lately said with respect to the utility of agricultural societies, and since the splendid agricultural meeting at Liverpool, even the first journals in the kingdom had admitted articles depreciating any good effects which could result from agricultural societies. Now he believed that, as practical men, if they were to look to the results of even one day's exhibition, they would be satisfied that such societies were of immense importance to the agricultural interest. (*Hear, hear.*) It had been said that they conferred a benefit on the proprietors of the land. Now he would have been glad if the writer of those articles to which he referred could have that day seen one single instance of rewards to labourers, either for skill or moral conduct. (*Hear, hear.*) Take, for instance, ploughmen and shepherds. He would ask any practical man present (not a proprietor, but a cultivator of land) whether good or bad ploughing would not make a difference of from one to three bushels per acre in his breadth of wheat? (*Hear, hear.*) If, therefore, they made a servant valuable as a good ploughman, he secured a situation with good wages, while at the same time he secured immediate profit to his employer, and of course benefit to the proprietor; so that there was a corresponding benefit derived. The members of the committee of this society had borne testimony that both ploughmen and shepherds, and in fact every class of agricultural labourers, had been stimulated by the rewards which had been offered; and therefore great good had been achieved. The society was originated by practical men; but it had been considered worthy of the countenance of the proprietors generally, and it was therefore now receiving from them extensive and liberal support. (*Cheers*). If the society also received the co-operation of the great body of the members, with respect to the best mode of promoting every one of its objects, he (Mr. Chawner) was quite sure that they should carry it forward in a manner worthy of that interest, which an American legislator at Oxford admitted was the foundation of this country's glory. (*Cheers.*) After returning thanks for the manner in which his health had been drunk, Mr. Chawner proceeded to read the

REPORT OF THE COMMITTEE.

" Your committee, in making their annual report, beg to congratulate the members generally upon the steady progress which the society has made since its first establishment in 1839. A considerable number of influential proprietors and practical agriculturists have joined the society, and the increased means thus afforded have enabled your committee to carry out the objects of the society with much greater effect. The premiums and rewards offered for the present year amount to 210*l*. The greatest attention has been paid to the first object of the society, viz.—to encourage and reward the exertions of agricultural labourers, and to give bounties to meritorious household servants. And here your committee beg to tender their best thanks to two members of their society, viz.—to our esteemed president, Sir F. Lawley, and General Dyott. Sir F. Lawley has doubled the premiums obtained by ploughmen using a plough with a pair of horses abreast; and General Dyott has placed 5*l*. in the hands of your committee, to be apportioned amongst the most deserving household servants in husbandry. These contributions from individual members have not only assisted the society's funds, but by encouraging in a much greater degree the exertions of the labourers and servants, have enabled your committee in a more satisfactory manner to fulfil this the first and most important object of the society. The premiums offered to labourers and servants, thus increased, amount to 75; and your committee have the satisfaction to state that, according to the testimony of several members of the society, the premiums offered have had the best possible effect in stimulating the exertions of the labourers, more especially as regards those two valuable classes of servants—ploughmen and shepherds. Your committee will on this point only add, as a suggestion to their successors in the management of the society, the necessity and importance of distributing a larger portion of the society's funds amongst the labourers and household servants. In requesting the attention of the society to the second object, viz.—to encourage the breeding and feeding of stock, your committee beg to recommend a total revision of the premiums hitherto offered, and recommend that more premiums be in future offered for store stock, and that the several classes should contain a larger number of animals. Your committee believe that such a change would not only give to the society a more distinctive character, but would have the effect of turning the attention of members generally to that most important object—the breeding of good and profitable stock. Your committee have to express their regret, that no essay has been sent in upon the subject chosen, viz.—" Lime as a manure;" and they would beg to suggest that the interest in the society's proceedings would be materially increased if members would prepare and write down their opinions on practical points in agriculture; such papers to be read at the annual general meetings of the society. In conclusion, your committee beg to express their decided conviction that upon the hearty co-operation of the great body of its members must the society depend for its future existence and success; and considering the influence and practical ability now at the disposal of the society, your committee are of opinion that if at this period an united effort be made, the society may be extended in its sphere of action and consequent utility, and that its objects may be carried out in a manner worthy of that great interest in which we are all mutually concerned."

The labourers were then called into the room and received their awards.

The Chairman said the next toast which he had to propose to them was " Prosperity to the Lichfield Agricultural Society." (*Cheers.*) In giving this toast he begged leave to congratulate the society upon the prospects of success which the report which had been read confidently held out, and which he was sure they all trusted would be realised. He had to announce to them that Lord Hatherton had undertaken the office of vice-president for the next year, and of president for the succeeding year. (*Loud cheers.*)

Earl Talbot said, the meeting will anticipate the toast which I am about to give, and I am sure it will be received with all the kindness and heartfelt gratitude to which such a toast is entitled. I give you the health of a man who now sits at the head of the table. (*Loud applause.*) I wish I had the ability to say half that I feel respecting him. He has been known to me all his life: and in not one instance have I ever found him otherwise than actuated with the utmost feeling of humanity, and bestowing benefit and kindness upon his fellow creatures. (*Applause.*) Had I the eloquence which I feel I want, I could go through his life with great advantage. Whatever he has undertaken he has succeeded in. Whether he be regarded in his capacity as a sportsman, as a yeoman in the tented field, as a farmer, or a landlord—in all these capacities he has dignified the name of man. I beg to give you the health of my friend " Sir Francis Lawley." (The toast was drunk amidst great applause.)

Sir Francis Lawley, in returning thanks, said that having been all his life conversant with the habits and conversation of farmers, having been brought up with them, and having had the happiness of knowing well how to appreciate all the happiness of a country life, and the advantage of living with men of distinguished honesty and probity, he confessed he had not expected to find himself in such a position as to want words to address them for the manner in which they had drunk his health. He knew that he owed what had been said of him to the kindness and liberality of his noble friend: and for such kindness he really did not know how to make an adequate acknowledgment. He would, therefore, content himself with drinking their good healths, and returning his very best thanks for the kind manner in which they had received him. (*Cheers.*)

Lieutenant-Colonel Monckton begged to propose the health of two gentlemen who he believed were most zealous in the discharge of the duties of their importance office, " the Members for the Southern Division of the County, Lord Ingestre and Colonel Anson." (Drunk with applause.)

Lord Ingestre and H. J. Pye, Esq., returned thanks.

Earl Talbot rose to give a toast which he was sure would be received with the most cordial applause by every one who heard it, and he would, therefore, at once propose " the health of the Earl of Lichfield, and the Staffordshire Yeomanry," with three times three. (The toast was drunk with great enthusiasm.)

The Earl of Lichfield returned thanks.

The Chairman observed, that he felt the greatest pleasure in proposing the next toast, because it called to his mind many early and happy associations. He was about to give " the health of the Members for the city of Lichfield," one of whom was present, and it was to him he intended particularly to allude. He (Sir Francis Lawley) was old enough to recollect the satisfactory manner in which his father represented this county; and the ability which the son had already displayed, very much to the benefit of the country, gave a happy presage that he would follow in the steps of his father—(*applause*)—and contribute equally to the honour and welfare of the nation. He now begged to propose " the health of the Members for the city of Lichfield, Lord Alfred Paget and Lord Leveson." (Drunk with loud applause.)

Lord Leveson, in acknowledging the toast, observed that it would have been his duty, on behalf of

Lord Alfred Paget and himself, under ordinary circumstances, to return thanks for the toast which it was customary to propose; but the very kind manner in which they had received that toast, and the manner in which an old and attached friend of his father's had proposed it, made him feel doubly grateful for the compliment. (*Cheers.*) Interested as the Members for Lichfield always would be in the prosperity of the town, it must be a source of no small gratification to Lord Alfred Paget and himself, to find a meeting held in Lichfield for so laudable and so useful an object, so numerously and respectably attended. He had had the honor of being called upon to give a toast, which he felt great pleasure in proposing "the English Agricultural Society"—(*Cheers*)—a society which he believed was considered by the Lichfield Society to be its parent. (*Hear, hear.*) After what Mr. Chawner, Sir Francis Lawley, Lord Ingestre, Mr. Pye, and Lord Lichfield had said of the advantages of such a society in encouraging the enterprising farmer and the praiseworthy labourer, in cementing the ties between landlord and tenant, and what, he thought, was of almost equal importance, in promoting the friendly intercourse and competition between landowners and farmers of every shade—(*Hear, hear, and applause,*)—it would be useless and presumptuous in him, before gentlemen so conversant with the theory and practice of farming, to enter into details; but there was one observation which he wished to make. He believed that some time since the proposal was entertained of holding the meeting of the Royal English Agricultural Society in that city. (*Applause.*) Now, he did hope that this proposition would be renewed, and successfully so. (*Cheers.*) Considering the extent and acreage of this county, and the amount of capital and intelligence employed in the cultivation of its soil, he need only refer to the large prizes won by their Lord Lieutenant at the Liverpool meeting—(*Applause*)—to show that the Staffordshire farmer was able to compete with the most eminent agriculturists, he might say, he believed, in the world. (*Hear, hear, and applause.*) He hoped that the distinction so justly due to this county would soon be obtained. (*Cheers.*)

Mr. Wyley, sen., at the request of Earl Talbot, here read the Prizes which had been awarded by the judges.

The Vice President, after some appropriate observations, proposed "Sir Francis Lawley and the successful candidates;" which was drunk with applause.

Sir F. Lawley returned thanks, and observed that the Vice President, in the course of the evening, had alluded to a very useful publication upon the subject of Farm Yard Manure, written by Mr. Wyatt, who was about to offer some useful observations, but had been prevented by the toasts which had to be proposed. He begged that Mr. Wyatt would now communicate that information.

Harvey Wyatt, Esq., said that he really felt most unexpectedly called upon by Sir Francis Lawley, he believed, in consequence of the hints of his friend, Mr. Chawner. He certainly should not have allowed the toast which the Vice President was kind enough to propose, to pass without most warmly thanking them for it; but he really had no observations to make upon the present occasion. His friend (Mr. Chawner) had said that it would be useful to the society if gentlemen would make some observations with regard to any particular points in agricultural management that might have come within their observation, and might have particularly struck their minds, and which might conduce to an improved system, but he confessed that he felt suddenly called upon and had nothing himself to offer. He considered that any observations succinctly delivered would be useful upon such an occasion: any long essay would not, perhaps, be acceptable; but any short hints on the application of nitrate of soda, for instance, might be beneficial; but he felt perfectly incompetent to offer any further remarks to the meeting, and therefore he should merely thank them for the honour which they had done him by drinking his health.

The Chairman, in proposing "the health of the Judges," observed, that the labours of their office were not easy, and did not always receive the reward which they deserved. (*The toast was drunk amid applause.*)

Mr. Humbers, in returning thanks, observed, that he believed the office of judge at agricultural meetings had never been considered by any one who had undertaken it to be a sinecure—(*hear, hear;*)—but he was sure that he and his colleagues were gratified if they had discharged their duties to the satisfaction of the society. They had had the great gratification of examining a very excellent show of stock, and they had come unanimously to their decisions. (*Hear, hear.*) He sincerely wished that prosperity might attend that society, which he did think promised to become equal, if not superior, to any local society in the kingdom.

The Chairman then said that he felt it was time for some of them to take their leave. He begged to thank them for the kind reception which they had given to him that day, and to drink to "our next merry meeting." (*Applause.*)

Shortly afterwards, Sir Francis and the principal portion of the company retired.

WEST CUMBERLAND AGRICULTURAL MEETING.

The annual exhibition of stock, &c., by the West Cumberland Agricultural Association, took place on Thursday, Oct. 7, in a commodious field belonging to the Earl of Lonsdale, in which the exhibition has taken place for the last four years.

We are glad to find that this Society is exciting an universal interest in this division of the county, and that private premiums are on the increase. In addition to the handsome premium offered by E. Stanley, Esq., M.P., to the tenant farmer who shall, under certain conditions, exhibit the best cultivated farm, Mr. A. B. Steward has offered the sum of five pounds as a premium to encourage the breeding of good horses: and we have also learnt that it is the intention of a gentleman connected with the agriculture of the district, to offer an additional premium for turnips eaten off by sheep.

The judges on this occasion were—Mr. Fair, of Frenchfield; Mr. S. Watkin, Plumpton; and Mr. Thornton, of Arkleby.

THE DINNER.

Shortly after three o'clock nearly ninety gentlemen, tradesmen, and farmers, sat down to the festive board, under the presidency of Robert Brisco, Esq., who was supported by W. B. Curwen, Esq., as vice-chairman. Amongst the gentlemen present, who supported the chairman and vice-chairman, we observed—Edward Stanley, Esq., M.P.; F. L. B. Dykes, Esq.; R. Jefferson, Esq.; G. W. Hartley, Esq.; T. Hartley, Esq.;

Rev. S. Key; Rev. J. Jenkins; Rev. H. Wyberg; T. Ainsworth, Esq.; G. H. Wilcox, Esq.; J. Peile, Esq.; H. Jefferson, Esq.; Mr. Lumb, Mr. Heywood, Mr. Atkinson, Mr. S. Rigg, (Abbey House,) Mr. Lindow, Mr. Holliday, of Seaton, &c. &c.

The usual loyal and complimentary toasts were drunk.

Mr. Brisco, in proposing "Success to the West Cumberland Agricultural Association," said, he had now lived five years amongst them in West Cumberland, and during that period he had devoted much of his time to the theory of agricultural science, in studying the many valuable and he might also add cheap works of the day, in watching the practical efforts of his neighbours and the results of those efforts; for most of them knew that he was not a practical farmer. He was afraid that Mr. Stanley had raised their expectations too high in speaking of his theoretical knowledge of agriculture; but in the full hope that it would give no offence, he would endeavour, as well as he was able, to throw out a few hints for their adoption, or rejection if they thought proper. *(Applause).* When he used first to attend the agricultural meetings in East Cumberland, he felt bound to acknowledge the superiority of their stock, particularly of short-horns: he thought them vastly superior to anything of the kind which he had witnessed in the West; however, they had run a rapid race in the path of improvement, and were now in a condition to exhibit stock with any part of the county. *(Loud cheering.)* In that respect East Cumberland must improve its pace, or succumb to the West; but he would recommend the farmers of West Cumberland not to make too sure, for the farmers of his division were made of good and sterling stuff, as tough as their own plough-shares: they would fight a hard fight. "When Greek meets Greek, then comes the tug of war." Now, as a theoretical agriculturist, he would suggest to them that it was of little value merely improving their stock, if they did not improve their land also. *(Loud cheers.)* He could base the truth of this observation on an authority much higher than his own, for Earl Spencer, at a late agricultural meeting, had very judiciously observed, that care must be taken that the improvement of the land kept pace with the improvement of stock. He, Mr. B., would recommend them to weigh well this point, and see whether they had not begun at the wrong end; for if they went on as they had done in improving their cattle and sheep, they must attend to the improvement of their land also, particularly if the opinion were correct that the improved breed of short-horns introduced into this part of the county required better pasture than other cattle which they were formerly in the habit of breeding. *(Applause.)* It might also be worth while to consider whether short-horns were the most profitable kind of cattle for some districts of West Cumberland, a considerable portion of which was mountainous and poor; and the question might likewise be asked, "Will short-horns thrive upon poor and highly situated pasture?" It was now proved, he believed, beyond dispute, that fine-bred short-horns did not thrive on such land; but that, in order to make them profitable, they required good land and shelter from the storms whenever they might blow. *(Cheers.)* The same observations would apply to sheep, the improved breeds of which required superior pastures and better shelter from storms and sea-breezes than the hardy mountain breed which had been so long cultivated by the farmers in this part of the county. It was an error in judgment to place high-bred and high-priced cattle on poor and exposed lands; the improved cattle and sheep must not be compelled to travel over a considerable district of scanty pasture to obtain a daily supply, their make was not fitted for it: it rendered of little avail their propensity to fatten. First, observe the shelter and quality of your land, but above all things, consider what quality and quantity of nutritious food you can provide to carry your stock in good condition through the rigours of winter; lay it down as a rule, without exception, and one that can alone yield a good return, that stock must not in the winter lose any of the condition obtained during the summer months, or indeed through any period of their existence. For the higher and poorer lands, the farmers in the east of this county have found the Galloway cattle most profitable, and he considered it worthy of their attention also. *(Hear, hear, and much applause.)* For the next best quality of land, he would recommend them to try the hardy and very profitable cross between the West Highland cow and short-horn bull: it possessed all the aptitude of the short-horn to lay on fat, and from its slightly diminished size and greater hardiness was better able to thrive on those lands where the short-horn did not so well succeed. Next, as to sheep, the same remarks held good; suit the breed to their land and locality, at the same time keeping in view what size and sort best suited the market within their reach—they would find the Cheviot draft ewes bought in in October, and put to a Leicester tup, return them a better profit than the black face: these with their lambs should be sold off during the next summer. He would recommend these as most valuable where they adopted a shifting flock. The Cheviot was as quiet and tractable as the Leicester, which gave it a great advantage over the wild fence-breaking black face. These observations he had thrown out for their consideration, and he felt assured they would be received in the spirit in which they were given. *(Cheers.)* The land, however, he would observe, was capable of great improvement; and as they were considerably behind East Cumberland in that respect, he hoped improvement in it would be speedily effected. In Norfolk and Lincolnshire, considerable tracts of land which were poor and barren, had been brought into a high state of cultivation by industry and good management. In Norfolk, the Earl of Leicester had cultivated extensive rabbit warrens: he had manured them with bone-dust and brought them to such a state of perfection, that they were covered with a verdure which fitted them to carry short-horns and Leicester sheep so extensively as to supply the pasture abundantly with their own manure, without having resource to foreign aid. These warrens, which at no very remote period were in such a state that they were only fit to feed a few hungry rabbits, were now carrying some of the finest stock in the kingdom, owing to the improvement which had been effected on them by careful and scientific cultivation. *(Loud and reiterated applause.)* But how had this improvement been brought about? Why, by the cultivation of one simple root—by the cultivation of the sheet-anchor of farming in light lands—by the cultivation of the turnip. Had it not been for that plant, the thousands of acres of rabbit warrens in Norfolk, the wolds of Lincolnshire and Yorkshire might, at this moment, be calculated among the barren wastes of England. For this adaptation of the turnip in the cultivation of his rabbit warren, the venerable and beloved Coke, of Norfolk, well deserved his peerage, and will, in after ages, be revered as a true patriot of this country. He, Mr. B., again repeated that the cultivation of the turnip was the basis—and he might almost venture to add, the only sure basis of good and profitable farming. There was another subject to which he would call their attention: he thought it might also be worth their while to inquire whether it was advisable to cultivate the potato crop so extensively in West Cumberland as had been hitherto done. The extensive cultivation of this crop had been the system followed for a long time past; but he was sure they would all agree with him, that the best system of cultivation was that which made them the most ample return from every crop in the course. The potato crop left the land unclean to what it would be by the turnip system: it left it filled with twitch, which was the most scourging and profitless crop the land could carry. He would recommend fallowing the ground with turnips, fed off with sheep, by which means they could both effectually clean it and improve not only its quality, but derive a fair profit from every succeeding crop in the course, and each succeeding course would improve under that system. (*Applause.*) There was another subject to which he would allude, and that was the practice of sowing rye-grass and clover along with wheat and barley crops. Now the rye-grass did not last more than two, or at most three years, and was quite inferior to the natural grasses; those grasses produced a much greater variety than where the land was merely laid down with rye-grass. The first crop of rye-grass and clover might be rich and abundant, equal to the first year of sown natural grasses; but the second and subsequent crop of rye-grass were much inferior to crops obtained from the natural grass. There was a gentleman connected with agriculture in this district who, had he not left the room, (he meant Mr. Dykes,) could have borne testimony to the superiority of sown natural grass over crops of rye-grass and clover. At the present moment it was most particularly necessary to attend to the improvement and extending the surface of pasture. They were all aware how high the price of lean and consequently fat stock had recently been. There was, in his opinion, little chance of those prices becoming much lower, and he would give his reasons for that opinion. It was well known to them that for a century past, or more, Cumberland and the rest of England, had, to a great extent, been supplied with lean stock from Scotland and Ireland: this supply had now mainly ceased, owing to the rapid and cheap trasport by the means of steam, which had enabled Scotland to export her cattle as fat to the great English markets, and which in the same ratio decreased the supply of lean stock for the English feeders. The Irish supply was also in nearly the same position, only from an additional cause. At the time of the union of the parliament of that country with England, a bonus was given in the shape of relief from tithe on agistment, the effect of which was to promote to an immense extent the rearing of clean cattle, which were shipped in that state to the English markets. A change had however recently taken place, by the passing of the Irish Tithe Commutation Bill, which putting all land on an equality in reference to tithes, had caused the Irish farmers to turn their attention to tillage, thus decreasing the production of stock, and enabling them in a greater measure to fatten the remainder. He warned them, therefore, to seize the moment, for on that one capacity depended the prosperity of man. Let them be prepared to turn to profit the approaching dearth. Coming events always cast their shadows before; fortunate is that man who can see and appreciate them; this power it is which solves the mystery of what is called good or bad luck. They must therefore begin in time to decrease the growth of grain and substitute pasture; for the Irish having a fresh soil and full of heart, will soon under-sell the grain grown on land already worn out by the over production of that article. Let them therefore turn to the increase of good pasture, and the rearing of profitable stock. It must be remembered that farming could no longer continue the slave of custom and prejudice; a brighter day is now shining on the efforts of man; science was pervading all human pursuits, and lighting the way to daily improvements. Agriculture was sharing in those advantages; and so closely was it connected with science, that the man who denied it must be mad, and must soon find his error in poverty and ruin. Science and agriculture were like the Siamese twins—united and indivisable. It became therefore requisite that farmers should read and study the valuable agricultural works published by the Useful Knowledge Society—works teeming with the most valuable practical information: their cheapness likewise was not their least advantage. The three volumes on husbandry he most particularly recommended. These hints he had thrown out for their advantage, if they thought proper to adopt them.

Mr. THOMPSON, the secretary, read the awards.

Mr. S. RIGG said, he had intended to have been a competitor for the Turnip crops; but Mr. Thompson wrote to him and desired him to consent to become a judge, which office he accepted and withdrew his claim as competitor. (*Applause.*) As judges, he could only say that they had done their utmost to give satisfaction: they had not merely looked at the crops generally, but they had examined them severally from side to side, and from end to end. (*Cheers.*) They had travelled above fifty miles in the discharge of their duties, and therefore they were not afraid that any one would follow them throughout their route for the purpose of criticising their labours. (*Laughter and applause.*) [Mr. Rigg then entered into a lengthy description of what he conceived to be the best mode of cultivating both Swedes and common turnips, of which he had had great experience.] The Swedes, he said, were generally too thick, but they found them all remarkably clean. They must always give the Swedes plenty of room, or they would never have a weighty crop. That fact he had stated to all the competitors as they went along. (*Applause.*) Too extensive a knowledge of the culture of turnips could not be acquired; there was nothing more useful to the farmer than a good crop of Swedes. (*Cheers.*) All the fine stock which they had seen that day were now fed on grass, but how were they to be kept during the winter? There was nothing that could be used in keeping them that could be compared to Swedes. (*Applause.*) In giving the premium for turnips in future, he thought that they ought to take into consideration the quality of the soil along with the extent of the crop. There was another matter for consideration too; there might be two farms, one of them only a mile from the town, where good manure could easily be got, and another ten from a town, where there was not the means of obtaining manure. Now it was impossible that two such farms could ever fairly compete. (*Cheers.*) Mr. Rigg stated that he had tried Swedes at a yard distance every way, and the produce was at the rate of twenty-four tons per acre: he had tried others at a foot distance, but they fell considerably short. The distance, however, which he would recommend ought not to be less than fifteen or eighteen inches between each plant. Having thrown out these hints, and having stated his objections to the chairman's opinion on the cultivation of rye-grass, and his objection to experimental farms, Mr. Rigg thanked the company for their attention and kindness.

The Chairman said that Mr. Rigg must have misunderstood what he said respecting rye-grass. What he intended to say, and what he believed he did say, was, that the second and third crops of rye-grass were always inferior to a crop of natural grown grass, which deteriorated considerably from the value of the first crop. He hoped that that explanation would be satisfactory. Mr B. concluded by proposing "The successful Candidates for the Turnip crop," which was drank amid general cheering.

The Chairman, in a very appropriate and eloquent address, proposed the health of "The Secretary and Treasurer to the Society, Mr. Jacob Thompson," than whom there was nowhere to be met with a kinder neighbour or a more obliging friend—he was indeed a man who had both a hand to help and a heart to feel (*Loud and general cheering.*) Mr. Thompson had refused any remuneration for his service, and they were about to make him a present of a piece of plate, which he might preserve as a bright and pure emblem of his unsullied honour and sterling worth.

Mr. Thompson rose to acknowledge the compliment which the chairman had paid to his services amidst overwhelming applause. He said he sincerely thanked the company for their flattering reception; but he felt deeply convinced of the fact, that Mr. Brisco had said far too much in behalf of his labours (*Cheers and cries of "No, no."*) With regard to his exertions in discharging the duties of his office, he could conscientiously say that he had done his utmost; but he looked for no reward—no such thing (*Cheers.*) If a piece of plate, however, were presented to him, he should certainly receive it with pride, and preserve it with pleasure (*Cheers.*) He would look upon such a present as a memorial of their gratitude and kindness; and whenever the day might arrive on which he was to receive it, he would look upon that day as one of the happiest and proudest of his existence (*Loud and reiterated cheering.*)

SHREWSBURY AGRICULTURAL MEETING.

(FROM A CORRESPONDENT.)

The exhibition of implements was to us a surprise. Two years ago Shrewsbury could shew little more than an abortion of a threshing-machine, a turnip and chaff-cutter or two, with the commonest turnip-drill, manufactured or offered for sale, within the town; but Messrs. Young and Spence seemed to have ransacked England and Scotland to present at one view, to the agriculturists who attended this meeting, the *élite* of implements used in the best farming districts of Great Britain. From Scotland we noticed Wilkie's horse-hoe, his prize subsoil and prize one-horse plough, Barrowman's improved plough, and several articles from Drummond's, of Stirling. From Yorkshire was brought Croskill's clod-crusher and wheat presser, with the patentee's last improvement. Durham and Rutland contributed their best ploughs, with about a dozen of the favourite ones from Norfolk, Suffolk, Essex, Kent, and Berks.

We think the Shropshire farmers, having seen these ploughs, should lose no time in sending their present miserable shieldboards to the nearest iron-foundry, and consigning the timber to the wood-stack.

Messrs. Y. and S. had on the ground about seventy articles; and though we can notice only a few, we saw none but what were practically useful. We must, however, particularize four, manufactured by themselves, which excited general attention and approbation. 1st. Their hinged double cast-iron roll, with wrought-iron carriages and frame. 2nd. Their horse hay-rake. 3rd. Their improved hay-tedding machine. 4th. Their movement to be attached to the motive power of a thrashing-machine, for working *all the in-door apparatus of a farming establishment.* In the field it was driving a large chaff-cutter, a turnip-cutter, and oat-crusher; and we are convinced that a couple more of any machines, capable of being worked by hand, might have been added and still have been quite within the limits of a single horse-power.

We may observe of these, as of every thing exhibited by Messrs. Young and Spence, that the workmanship would have done credit to any establishment.

CARLTON-ON-TRENT FARMERS' CLUB.

Ploughing Match at Ossington, Notts, the Seat of J. E. Denison, Esq., M.P.

The Members of the Carlton-on-Trent Club had a trial of skill amongst their servants on Tuesday, Oct. 19, which reflected great credit not only on the members of the club, and the managing committee, but on the competitors, the servants of the farmers comprising the club, inasmuch as the work was executed in first rate style, particularly amongst the first class, and indeed the second and third classes did their work in a very praiseworthy manner.

The judges of the ploughing were Mr. Curtis, of Norwell; Mr. Clark, Norwell Lodge; and Mr. Drury, Woodhouse.

First Class.

First prize of 2*l.* 10s. to James Gilbert, servant to Mr. Hole, Carlton-on-Trent.

Second do., of 1*l.* 15s. to John Hallam, servant to Mr. Roberts, Bathley.

Third do. of 1*l.* to Wm. Cartwright, servant to Mr. Hole, Carlton-on-Trent.

Second Class.

First prize of 1*l.* 15s., to John Bettison, servant to Mr. Pawson, Ossington.

Second do. of 1*l.* 5s. to Wm. Allison, servant to J. E. Denison, Esq.

Third do. of 15s. to Wm. Wood, servant to Mr. D. Smith, Cromwell.

Third Class.

First prize of 1*l.* to Joseph Coe, servant to Mr. Pawson, Ossington.

Second do. of 15s. to John Johnson, servant to Mr. Smith, Ossington.

Third do. of 10s. to Charles Wheat, servant to Mr. Buttery, Sutton-on-Trent.

An excellent dinner was provided at the Bell Inn, Carlton, by Mr. Buttery, at which R. Parkinson, Esq., presided. The usual toasts were given from the chair, and great harmony prevailed throughout the evening. Among the toasts given was the health of the President, J. E. Denison, Esq., M.P.; and then of the Vice-President, by Mr. Pettinger, who passed a high eulogium on the character of that gentleman as a farmer. To this Mr. Parkinson responded in a very neat and happy manner, and at some length. The next toast was from the Chairman, who proposed "Success to the Collingham Farmers Club," which was responded to by Mr. West in a very sensible speech, which reflected great credit on himself and the club. The health of Mr. Buttery, the secretary, called that gentleman on his legs, who returned thanks in a speech containing many very valuable practical remarks and suggestions. To him succeeded Mr. Weightman, who returned thanks for the health of the Committee being drunk. The health of the Judges was next proposed, and was responded to by Mr. Clark. The following gentlemen were then appointed as judges of the turnip crop, entered for a sweepstakes, to come off on the 4th of Nov. next, namely—Mr. Parkinson, Mr. Thos. Smith, and Mr. West, of Collingham. The latter gentleman engaged to read on the same evening, a paper "On the best means of making and managing Fold-yard Manure." This is an important subject, and ought to engage the attention of practical men more than it has heretofore done.

AGRICULTURAL QUERIES.

ON THE DROP OR FALL IN COWS.

Sir,—Having lost three cows within the lapse of as many months by what is termed the drop or fall in calving, I take the liberty of troubling you with the following for insertion in your valuable Journal:—The first cow that calved, I perceived to be taken with all the symptoms of the fall about three hours after calving, viz.:—a trembling of the frame (the flanks in particular), with an almost constant twitching of the hind quarters, and great weakness across the loins; this might be seen to gain ground every five minutes, until through weakness the cow laid down, and was unable to rise again. I sent for a farrier who is reckoned clever in such cases, and who used his usual remedies, but without effect; as the cow, after turning over several times, and a continual turning of the head towards the loins, sunk rapidly and died within the short space of twenty-four hours. The other two we have lost, were taken in a similar way, though a longer time elapsed after calving before they fell, and the disease did not appear to affect the frame so much as the first one, although they died within as short a period after falling. The first cow had not had any of the usual remedies before calving, such as bleeding, &c.; the other two we had bled about ten days before their time was up; and the last one I had milked about the same period of time, the plan being recommended by the farrier to get the milk in the proper channels. The cows were both of them very forward in condition. You will excuse me troubling you, Mr. Editor, with this letter; but should it chance to fall under the notice of any of your numerous readers who have experienced similar cases, perhaps some information might be given as to the best known specific, either as a preventive or cure after falling; and if any good cure could be made public through the medium of your valuable Journal, it would be conferring great benefit, not only on individuals, but the community at large.

I am, Mr. Editor, yours most respectfully,
H. Gamer.

Blatherwicke Park Farm, Oct. 25.

THE EPIDEMIC.

Sir,—Having read in the last number of your excellent Journal several enquiries from your Irish subscribers respecting the epidemic amongst horned cattle, might I take the liberty to solicit through your pages, some information from your numerous readers, respecting the epidemic, or cholera, which has been so deadly amongst pigs this autumn, I believe in other parts, as well as in this part of the north of Ireland?

About two months ago, it made its appearance amongst my pigs. I succeeded at first, in two instances, by administering powerful purgatives, in getting rid of it, but latterly it has been so fatal, that the pigs seldom lived more than six hours after they first showed symptoms of the attack. The flesh along the breast and belly in every instance turned black immediately after they were affected. I lost, in one week, fourteen valuable pigs, all appearing regular enough in their bowels, and in good health before the attack came on them.

No medicine whatever appeared to have any beneficial effect on their systems.

If any of your readers know of an effective remedy for, or preventive against, this frightful disorder—their making it known through the pages of your valuable Journal would confer a favour on many, especially upon,

Sir, your obedient servant,
A Constant Subscriber.

County of Derry, Ireland.

ON PLANTING OSIERS.

Sir,—I have it in contemplation to plant osiers upon an extensive scale. The land I have laid out for this purpose is a piece of moory, or rather boggy bottom, mixed with a small portion of earthy matter—the washing of the neighbouring hills, and deposits from a stream which runs through the land in question—I should be favoured if some of your numerous and clever practical correspondents would enlighten me by saying if such a soil is adapted for their growth, the best mode of culture, and the kind fit for the finer description of basket-work. If the probable crop per acre is named, I shall take it as an additional favour.

I am, Sir, your very obedient servant,
Enniscarthy, Sept. 21. Germ.

P.S. The land in question has in some parts only two feet of peat or bog upon it, and ranges from this depth to eight feet of peat. Upon this latter portion (which is a small one) there is no earthy matter. Would this be fit for the growth of osiers? The whole rests upon a calcareous substratum—marl or limestone gravel; and upon the shallow parts the peat is much decomposed, but upon those deeper it is very little so, and upon the deepest part, decomposition has not yet taken place.

ON SHELL MARL.

Sir,—A level which was lately driven through a part of the farm I occupy, discovered a bed of shell marl, which I believe to be of considerable value if I knew how to apply it; and shall feel obliged by your giving a place in your valuable Journal to the following questions, which I hope some of your numerous correspondents will have the kindness to answer.

1. Will it grow turnips or potatoes ?
2. Can it be used advantageously as a top-dressing for grass ?
3. What kind of grain crop is most benefitted by it ?
4. How prepared (if mixed with any thing, such as earth or lime ?)
5. How applied, when, and in what quantity ?

To be thoroughly understood, the measures used in the answer would require to be, the imperial acre of land, and the cubic yard of marl ; and any other information regarding it will be gratefully received by, Sir, yours respectfully,

A Constant Scotch Reader.

ON STORING CARROTS.

A Correspondent enquires the best mode of storing carrots, the proper time of taking them up, and if the tops should be cut off close to the root or otherwise.

CORN MILLS.

Sir,—I shall feel obliged if any of your readers, through the medium of your paper, will inform me where the best constructed corn mill for general purposes is to be procured.

I am, Sir, yours respectfully,

A Subscriber.

Birmingham, Sept. 30.

SOOT AS MANURE.

"A Yeoman of West Cornwall" enquires what is the best means of applying soot as a manure, on what crop, at what time of the year, at what quantity per acre, and if mixed with any substance previous to using, and of what that substance should consist.

Oct. 16.

THRASHING MACHINES.

Essex, Sept. 20, 1841.

Mr. Editor,—Can any of your mechanical correspondents inform me what is the best plan and description of a Thrashing Machine for thrashing Wheat clean, not breaking the straw ; and the greatest quantity for the least possible horse power per day—I mean a portable one ; or can you refer me to any work containing detailed information on the subject. I have old ones. It must be a late discovery or application to be of any service to me.

I am, Sir, yours truly,

An Essex Farmer.

LIQUID MANURE TANKS.

Mr. Editor,—I shall feel obliged if any of your correspondents will inform me what is the best plan for a Liquid Manure Cistern, with expence, and the best mode of conveying it upon the land.

A Constant Reader.

Cambridge.

We beg the attention of our readers to a "Notice" in our advertising columns, which states that the allotment of shares in "The Farmer's Insurance Institution" will be finally closed on the 16th November.

CALENDAR OF HORTICULTURE FOR NOVEMBER.

At this damp season, the precursor of winter, it is noted that there are generally fewer alternations or fluctuations in our instruments than in any other month of the year ; thus, we perceive the calculated averages of the thermometer to vary but little between 40° as a minimum to 45° maximum : the mercury of the barometer rising or falling scarcely half an inch, the mean being 29 inches, 65 cents. ; still the rule admits of many exceptions. Much, therefore, of the work in the several departments must depend upon the condition of the weather.

VEGETABLE DEPARTMENT.

Artichokes, (*Cynara Scolymus*)—being rather tender, should be protected, and moulded about the middle of the month. In doing this, trim off all the old leaves, leaving those of the head entire : then cut a trench as for celery, exactly in the centre between two rows, or on each side of a single row ; dig the earth out of the trench, and raise it ridgwise along, and between the plants ; if severe frosts occur, a quantity of dry litter, or two boards placed as a penthouse over the tops, will greatly protect them ; in fine dry situations, however, artichokes will support our ordinary winters without landing.

Artichokes—The Jerusalem, so termed, should be digged as wanted ; providing, of course, a supply to meet the demand ; but the tubers keep best (and remain good till March) in the ground.

Broccoli—if not duly protected, should have good dry earth laid up the stems, nearly to the leaves.

Cauliflowers—those in the open ground, lay them, stems down, sloping on the ground, toward the north, and cover them with dry earth. Give air in dry, mild days, to the plants under glass.

Celery—is now grown to its utmost extent; and this being the case, that intended for future supply must be earthed up, by ridging it on both sides, with the dryest mould the season will afford, to within six inches of the tops.

Endive—Tie up some plants when quite dry, to blanch them. Dig up other plants, and place them deep in very dry earth within frames.

Carrots and Beet—Take them up, opening first a trench, and working towards it as the roots are seen : by which means the cuts and wounds inflicted by ordinary digging will be avoided. Store them (after carefully removing the longest leaves) in dry sand, under a shed.

Lettuces—under glass or in frames, must have air, otherwise they will be drawn. Some persons succeed well by planting them six inches asunder, about Michaelmas, on ridges ; and if the ground be wet, it is the only safe method in open culture.

Potatoes—ought to be housed before November, but many are still out. A slight frost when they are wet, destroys the cuticle ; therefore the utmost vigilance should be exerted. In storing them, a dry, cold, situation is the best preservative. All decomposing substances promote growth, and convey a vicious mouldy flavour.

Sow one or two rows of an early pea, as Cormack's Kent, early Warwick, or frame. Also Mazagan beans. If weather favour them, an early crop (as in May, 1841) will perhaps be obtained. If small salad be in request, it will be proper to sow in large pans, boxes under glass, or even on the floor of a vinery.

FRUIT DEPARTMENT.

We cannot recommend the pruning of peach, nectarine, or apricot trees; nothing is gained, and the fruit buds can be better seen in February. Currant and gooseberry bushes should be left as they are, hoeing the ground a little, and laying a coating of manure on the surface about the roots. If the trees have suffered by the August brood of the caterpillars of saw-flies, the grubs may be suspected to lie torpid under each affected tree, about three or four inches below the surface. A writer in the *Quarterly Journal of Agriculture* recommends to raise the ground to that depth, carefully preserving the clods whole, and not turned; then to strew a stratum of fresh-burnt broken lime, perhaps half an inch thick, on the exposed surface, and finally to return, upon the lime, the earth, so that it lie on it exactly in the same position in which it was raised: the heat of the slaking is presumed to destroy these insects which are below it, and also those on the under side of the moved earth. Urine of cows is also recommended. The flies from this brood generally emerge in April.

Vines against walls should be pruned and nailed as soon as possible. White grapes succeed best on the 'long rod' system, that is, by selecting the straight long branches of the year's growth, and training them as successions, cutting clear back to a low eye, all that have borne fruit; but black grapes succeed well on the 'spur system,' retaining three or four good eyes to each spur shoot. The old 'fruit tree,' irregular figure, is gradually vanishing. In *Vineries*, good grapes, now ripe, may be retained on the trees for two or three months by employing occasional fires, with air just to prevent frost and expel moisture. The *early house* must be got ready, the flue in complete order, the surface washed with lime and sulphur, the vines pruned, the rods cleared of the loose, stringy bark, and covered with a wash of sulphur and soft soap. No heat, however, should be applied previous to the season of forcing.

The direction in our last for *Pines* will equally apply now. *Apple* and *Pear*, and plum trees—dwarfs, espaliers, and on walls—may be pruned and secured; and the ground about the stems neatly forked.

Strawberry plants, in pots, are safely protected and maintained in a torpid state, by digging trenches two spits deep, laying the pots on their sides in two tiers in the trenches, and covering them with a good coating of straw; this is a cleaner method than that of plunging the pots in ashes.

Nail fig-trees close to the wall, and interlace the branches with the spray of the spruce fir. Trees of every sort may be planted, but not beyond the middle of the month.

Raspberries, whether of old stocks or newly planted in October, will have shed their leaves; they should therefore be staked, and secured by ties of fillis, or soft light cord; the object is two-fold—the first to expose these bearing rods duly to the sun, and to provide for those new shoots which will rise in the spring, and become the bearers of the following summer. To effect both these purposes, drive the stakes sloping to the north, at angles of 30 degrees from the perpendicular; then secure the rods to them: thus they will have a full sunny exposure, and some reflected heat from the ground; and the young shoots will ascend perpendicularly, without mixing confusedly with the bearing wood.

FLORAL DEPARTMENT.

This is the month for planting Tulips, Hyacinths, Narcissus, and, indeed, most bulbous roots; sand should predominate in the soil. Herbaceous plants may be moved, and the surface of the ground in all the vacant parterres, forked and left neat; but plots of Verbenas, Nemóphilæ, and most plants in mosses, are left as they were usually; nevertheless, we cannot but think that if some very dry sandy loam were lightly sprinkled among the trailing shoots, many beauties (*Verbena Melindres* for one), which but too often perish, might be preserved alive, and yield store of Spring plants.

If very little more rain fall, such is the quantity now in the land, that, with the prevalent damp of November, little to any purpose can be effected.

This mention of damp enables us, very appositely, to cite a few clever remarks on the protection of plants under glass, which we perceive in *Paxton's Magazine of Botany*, November 1839. Our experience justifies their correctness. "Every experienced cultivator is aware that it is not in the actual months of winter that the greatest difficulty is felt. Those periods at which the most striking changes in the atmosphere and temperature occur, the rise and fall of the seasons, or the commencement and departure of winter, are the chief tests of skill in the treatment of tender species. A moderate degree of aridity, both of atmosphere and soil, is the grand desideratum throughout this trying season. As a first step, and one upon which the whole system entirely depends, it is of the highest moment that the plants themselves should be brought early to a fitting state of dryness; with this view, let them be watered only to keep them alive. We never yet witnessed a plant that was killed, or even injured by a slight drought in winter; while, that thousands yearly perish from a contrary cause, must be known to all."

A previous preparation is implied during the months of September and October; the protective system amounting to this, that the wood is to be brought to a ripe and dryish condition by checking the tendency to growth in autumn, and gradually inducing a state of dormancy, almost amounting to torpor. We saw the advantage of this treatment in respect to fancy Pelargoniums, during the severe frost of January. Our soil in the pots was almost dust dry; the plants being nearly flaccid. By an oversight on the night of the 7th, with 26 degrees of frost, the flue cooled rapidly, and we found the thermometer below 27° Fahrenheit; yet the plants, with two exceptions, remained secure. Had the soil been wet, and the shoots brisk and juicy, all would have been frozen.

The Sale of Mr. T. Hurst's Stock attracted a large company. Highest price for full-mouthed ewes, 48s., lowest, 36s.; four tooth do., highest, 49s., lowest, 39s.; two-tooth ditto, highest, 48s., lowest, 40s.; ewe lambs, highest, 41s., lowest, 25s. The thirty rams and ram lambs averaged 7½ guineas. One ram lamb sold at 20 guineas. The 107 head of neat stock fetched 1938*l*. The highest cow 34 guineas; three year old heifer 25½ guineas; two highest cows 32 guineas; yearling 19 guineas. The three bulls averaged at 16 guineas. The six pair of working oxen averaged at 51*l*. 5s. a pair. The two year old steers averaged at 39*l*. a pair. The yearling at 28*l*. a pair. A two-year old, bought by Mr. Waters, in being driven home jumped over a bank and broke his neck.

The estate of John Bastard, Esq., at Sharpham, near Totnes, with its admired mansion, park, and demesne, was sold on Thursday last, for 68,500 guineas. The estate numbers 1,300 acres of land, and the rental, independently of the mansion, is 2,070*l*. a year. The purchaser is an opulent merchant, named Durant, who was formerly connected with this city. Independent of the purchase money, he has to pay for all the timber on the property. It is thought the entire purchase will amount to more than 75,000*l*.—*Exeter Times*.

AGRICULTURAL REPORT.

GENERAL AGRICULTURAL REPORT FOR OCTOBER.

For turbulence and humidity the weather of this month has not been equalled in any October for many years, and, as a matter of course, proved highly prejudicial to the interests of the agricultural community, who have had much to contend with, both in ploughing and sowing. Notwithstanding the present advanced season, we regret to state that several patches of wheat, barley, and beans are still exposed to the inclemency of the weather in our northern districts, the principal portions of which will become wholly useless, except as fodder for stock. In the southern, western, and some of the eastern counties, the whole of the crops have long since been gathered in; but, comparatively speaking, not in such good condition as could be wished. The heavy rains have had the effect of producing great floods in some of the lowlands, and have created difficulties of no ordinary character to the depastured stock, and has rendered the land very soft and damp.

A most important consideration is now occupying the attention of our agriculturists—that of the acreable yield of wheat. From all that we have been enabled to learn, both verbally and by numerous correspondence, we should say that a decided falling off is apparent in it; not only as respects the red, but also the white qualities: hence it will be readily conceded that the late extensive importations of foreign wheat will not have the effect, as was anticipated some time since, of depressing the value of that description of corn. Besides, the great quantity of grain which has arrived much out of condition, must inevitably cause a higher range of currency to be demanded by the holders of good sound saleable sorts. As to barley, we find the yield to be about an average in quantity, but a sad deficiency is observable in the quality; and it is considered that considerable difficulty will be found in the approaching season, to procure, except at very high rates, an adequate supply of that article to meet the wants of the maltsters. Oats have proved unusually short in straw, but the quantity produced is considered fair. Both beans and peas have fallen considerably short of the expectations of most farmers, and high terms are expected to be realized for them.

It has been a subject of remark, that the land scarcely ever exhibited so green and cheerful an appearance as has been perceived during the whole of the month; but it could scarcely be otherwise, considering the prevailing humidity. The stock has fared tolerably well, while the epidemic has very much abated amongst the beasts; but the sheep still continue to be severely afflicted, and numerous losses have in consequence been the result.

On account of out-door farm labours being so much impeded, thrashing has been carried on to a considerable extent, and it is fully anticipated that the markets during next month will be liberally supplied.

In our provincial markets, as well as at Mark Lane, the supplies of wheat of home produce have been extremely limited, and of very middling condition. The finest parcels, from the numerous attendance of dealers, have commanded a brisk inquiry, at an advance of from 4s. to 6s. per quarter, and an improvement of from 3s. to 4s. has taken place in the secondary parcels. Foreign wheat has come freely to hand, yet the demand for it has ruled steady, at a rise of from 4s. to 5s. per quarter, and some extensive sales have been concluded. Good malting barley has been sought for, and the quotations of all descriptions have been fully supported. Malt has sold at previous rates, with fair supplies offering. A slight falling off having been apparent in the receipts of oats, an enhancement of from 6d. to 1s. per quarter has been realized for them. New beans and peas have risen 2s. per quarter, and the rates of other grain have been fairly maintained.

The securing the potato crops has gone on slowly in consequence of the wet, but we trust a fair growth of that valuable esculent will in all probability be secured. The arrivals in the metropolitan markets from distant parts, have not proved of good quality, and only produced low quotations.

By advices from Scotland—in which some heavy snow storms have been experienced—we learn that in the north, nearly a fourth of the corn is yet out; but in the south a fair clearance appears to have been made, although under unfavourable auspices. A decided deficiency is here apparent in the corn, and a scarcity of good heavy samples is complained of. The demand in the principal markets for grain has continued steady, at higher prices—say from 1s. to 3s. per quarter.

The season has been backward in Ireland, but much activity has been observed at dry intervals in stacking. Regarding wheat and barley, our accounts are unfavourable; but oats, beans, and peas appear to be an average crop.

The following is our usual statement of the supplies and prices of fat stock, exhibited and sold in Smithfield Cattle Market, during the month. Those of the former have consisted of 15,200 beasts, 129,000 sheep, 930 calves, and 1,230 pigs; while the latter have ruled as follows:—Beef, from 3s. 4d. to 4s. 8d.; mutton, 3s. 8d. to 5s.; veal, 4s. 8d. to 5s. 6d.; and pork, 4s. 6d. to 5s. 6d. per 8lbs. to sink the offals. On most market days, there has been a fair attendance of dealers, while the demand has ruled steady at full prices.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, October 26, 1840, and Monday, October 25, 1841.

At per 8lbs. to sink the offals.

	Oct. 26, 1840.						Oct. 25, 1841.			
	s.	d.		s.	d.		s.	d.		s.	d.
Coarse & inferior Beasts	3	0	to	3	2	..	3	4	to	3	6
Second quality do.	3	4		3	8	..	3	8		3	10
Prime large Oxen......	3	10		4	2	..	4	0		4	2
Prime Scots, &c.......	4	4		4	8	..	4	4		4	6
Coarse & inferior Sheep	3	4		3	8	..	3	4		3	6
Second quality do.	3	10		4	0	.	3	8		4	0
Prime coarse woolled do.	4	2		4	6	..	4	2		4	6
Prime Southdown do..	4	8		5	0	.	4	8		5	0
Large coarse Calves ..	4	4		4	8	..	4	8		4	10
Prime small ditto.	4	10		5	0	..	5	0		5	4
Large Hogs...........	4	0		4	6	..	4	8		5	0
Neat small Porkers ..	4	8		4	10	..	5	2		5	4

SUPPLIES.

	Oct. 26, 1840.	Oct. 25, 1841.
Beasts...	3,733	3,747
Sheep and Lambs	25,170	23,680
Calves	119	106
Pigs................	780	603

The arrivals of slaughtered meat, up to Newgate and Leadenhall markets, have been very limited; but with meat killed in the metropolis they have been largely supplied. The best meat has sold freely; but otherwise the trade has ruled heavy.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

COLCHESTER FAIR.—The supply of beasts at this fair on Wednesday was very short, and not of so good quality as on former years, owing as is supposed to Melton fair happening on the same day, to which probably the best beasts were taken. But although a short supply, the purchasers were by no means anxious to purchase, and the trade was exceedingly flat, and but very few sales effected, which is attributed to the very high prices asked; the graziers of the neighbourhood being pretty well already supplied from our excellent mart (the market). There were several lots of polled Scots, not large, but in a fresh condition, for which 14*l.* 10s. per head was asked; but the dealers not being willing to yield to any reduction, we believe they left the field unsold. We heard that 13*l.* 10s. per head was bid for them. There were no good short-horns at the fair; in fact, all the beasts were of a secondary quality, and the principal dealers acknowledged that they had not sold so few for many years. The supply of sheep and lambs was good, there being about 6,900 penned, but the trade was not brisk; two or three pens of half-bred wethers were excellent, and were sold at 47s. 6d. and 48s. 6d. per head; other qualities varied from 36s. to 41s. per head; lambs from 19s. to 23s. per head. The supply of cart horses and colts were larger than usual, and the latter of very useful but not of first-rate quality; but the demand was brisk, and three-fourths of them changed hands at good prices according to quality. Two year olds from 20*l.* to 27*l.* each; three year olds, from 25*l.* to 33*l.* 10s. each. There were two Shire bred colts (3 years old), very excellent, which were sold at 38*l.* 10s, each. Good cart horses, 5 years old, sold at from 35*l.* to 42*l.* each; aged, from 15*l.* to 21*l.* each. There were no good nags at the fair, but there was a considerable number of inferior ones, the principal business in which was transacted with the London dealers, at prices according to quality and the season of the year. A considerable number were transferred. The business in the horse fair altogether may be considered good.

WINCHESTER FAIR, compared with last year, was not so largely supplied, but there was an average number of sheep and lambs penned for sale, by far the greater portion of which was sold by ten in the morning, and by twelve almost every pen had changed hands. The stock was in remarkably good condition, and this, together with the great plenty of feed, enhanced the price from 5s. to 6s. per head beyond the value of last year's fair. Amongst the finest stock may be noticed the wethers and lambs of Messrs. Nevill, Fitt, Fielder, Bridger, and some others; and the ewes of the Messrs. Fitts, J. Cordery, Dear, and others, brought high prices. Wethers, 35s. to 44s.; Ewes, 25s. to 40s.; Lambs, 16s. to 33s. per head.

MAIDSTONE FAIR.—The business of the day was brisker than at any fair for a long period, if we except the hop fair, which we have noticed elsewhere. The show of cart horses, many of which fetched good prices and met a ready sale, was better than has been seen for many years. Of nag horses there were very few, and those were named at high prices. The supply of stock was also good, the prices high, and the sales numerous. A Welch dealer, who started from Wales with a drove of 1500 beasts, sold the last at Maidstone on Saturday last. Milch cows were much in demand. Several sales were effected at twenty guineas, and the Welch in-calf heifers, which usually range at from 5*l.* to 8*l.*, were none of them sold for less than 10*l.* Store sheep were in brisk demand and plentiful supply, indeed everything of stock fetched higher prices than has been known for a long period. We ought not to close this brief notice without mentioning the great display of excellent agricultural implements, of various descriptions, made by Mr. Balls Garrett, whose line of drills, subsoil ploughs, cutting machines, &c., extended a considerable distance up Earl-street, and excited much attention amongst intelligent agriculturists.—*Maidstone Gazette.*

YARM GREAT OCTOBER FAIR.—This ancient standard fair was held on the 18th inst., for horses, on the 19th for horses and cattle, and on the 20th for sheep and cheeses, as usual, and was extremely well attended on all the days. Good coach-horses, hunters, and roadsters, were much enquired for, and commanded high prices, and the gentlemen commissioned to purchase military horses, met with good choice, and purchased very largely, but the common sort of coach-horses, and common harness horses, were not much in demand. The show of shorthorns was large, and the quality extremely good. Beef sold at from 6s. 9d. to 7s. 6d. per stone. There was an excellent show of tups, as well of the Leicester as of the Tees Water breed. There was also a very large show of shearlings, and other fat sheep, which sold at from 5½d. to 6½d. per lb., and the choice of breeding ewes, sheep for turnips, and Highland wethers, was likewise good. There was a greater weight of cheeses shewn than we have seen for many years. New milk sold at from 50s. to 60s., general price 54s. per cwt. of 112lbs., and old milk at from 29s. to 34s. per cwt.

MR. JONAS WEBB.—We understand that an engraving of three of Mr. Jonas Webb's celebrated tups, as exhibited by him at the meeting of the Royal Agricultural Society at Liverpool, and himself attending on them, will shortly be published. Subscribers' names will be received by E. L. Bewsher, Esq., Secretary to the Saffron Walden Agricultural Society.

MR. PRICE'S SALE OF HEREFORD CATTLE.—We have postponed any notice of this important sale, in order that we may be enabled to give a full, correct, and *authenticated* statement, which will appear in our next.

SALE OF SHORT-HORNS.

The high estimation which we have always entertained of the character and quality of Mr. Jaques's stock is completely borne out by the prices obtained at his sale on the 27th Sept. The following is a specimen :—"Mermaid," which won the prize at the meeting of the Royal Agricultural Society, held at Cambridge, as the best heifer under two years old, was purchased by Mr. Booth, of Killerby, for 165 gs.; "Golden Drop," by Mr. Maynard, for 160 gs.; "Lady Anne," by Mr. Parkinson, of Ley Fields, for 135 gs.; "Young Rachel," by Mr. Brown, for 100 gs.; "Dahlia," by Mr. Harrison, for 70 gs.; "Celma," by Mr. Baker, for 67 gs.; "Victoria," by Mr. Brown, for 61 gs.; "Warren Rose," by Mr. Wetherell, for 61 gs.; "Epaulet," by Mr. Brown, for 60 gs.; "Rosa," by Mr. Hincks, for 50 gs.; "Wild Rose," by Mr. Knowles, for 45 gs.; "Romp," by Mr. Forster, for 42 gs.; "Violet," by Mr. Maynard, for 40 gs.; "Etta," by Mr. Denny, for 40 gs.; "Rosebud," by Mr. Mauleverer, for 40 gs. Of the Heifer calves, "Hippodamia" was bought by Mr. Severs for 60 gs.; "Purity," by Mr. Severs, for 51 gs.; "Caradori," by Mr. Baker, for 41 gs.; "Catalani," by Mr. Baker, for 23 gs. The Bull "Clementi," which obtained the first prize at the meeting of the Royal Agricultural Society at Cambridge, was bought by Mr. Rutson for 150 gs.; "Magistrate," a yearling bull, was purchased by Mr. Harrison, for 40 gs.; and "Dulcimer," a bull calf, was purchased by Mr. Booth, of Killerby, for 105 gs.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF OCTOBER.

The operatives and artizans in the United Kingdom are much too intelligent to permit their opinions on the subject of agricultural improvement to be in any manner influenced by the dogmas and absurdities which the lecturers on a free corn trade have continued, during the last month, again to promulgate amongst the people. Two or three years ago these agents of the master manufacturers complained that the price of labour was by far too dear in this country to enable their employers to sell their goods abroad on as favourable terms as the foreign manufacturer was enabled to do, and a reduction in the wages of labour was then consequently considered by them as the only cure for this obstruction to their intercourse with foreign nations. To reduce the wages of those labourers, however, through whom they had, in numerous instances, previously acquired more than princely fortunes, was soon discovered to be entirely impossible, unless it was preceded by a reduction in the value of the necessaries of life; and it was for this purpose alone that the hostility now for some time expressed by them against the corn laws was called to their assistance. For the real interests of their workmen they expressed no consideration whatever. They knew that their numbers were large, and they thought that at any time they could obtain as many workmen as they desired on payment to them of wages far more considerably reduced than an entirely free corn trade would have reduced the value of the necessaries of life. This doctrine, however, was also found to be so shallow, that it very speedily evaporated, and then they resorted to the long-since-exploded argument of a barter trade—England receiving grain in exchange for her manufactured goods. We have often had occasion to assert that a barter trade betwixt Great Britain and foreign nations in grain and manufactures, never yet did exist, and, in the present state of civilization, never can. Had the principle been well founded, the manufacturers at present, most certainly, would not have had any occasion to complain of the want of a foreign demand for their manufactured goods. During the last four years, we may say, the foreign grain trade has been nearly the same as it would be was the trade entirely unrestricted, and immense quantities of grain of foreign growth have been consumed within the United Kingdom. During these years England has paid very largely for food to its foreign producers, and yet the exportation of British manufactures to those countries from whence the supplies of grain have been so largely imported has, during the same period, annually decreased. It is therefore in the unfortunate state of our crops during the years 1838, 1839, and 1841, that commercial distress has originated; for the plentiful produce of 1840 has been unable to supply the previous deficiency, and it is to this virtual repeal of the corn laws, which these circumstances have rendered necessary, that such general distress, and we may say wretchedness, now so universally complained of by nearly all the industrious classes in society, must in a material degree be attributed. The intelligent manufacturer, the artisan, and the operative, are perfectly aware that the real cause of their want of productive employment at present arises chiefly out of the high rates of annual interest now charged on the loans of money, which has been made scarce by the abstraction from circulation of an immense amount of specie, the remittance of which to foreign nations had been rendered necessary for the payment of foreign grain imported here for home consumption. It is utterly impossible to produce a more conclusive argument in favour of any subject whatever, than this fact is in favour of the largest legal protection which the nature of things admits of being still extended to the cultivation of our own fields; for on its success depends the real prosperity of every individual in the British Empire, not excluding that of the master manufacturers themselves. The repeal of the corn laws must annually increase public distress, so long as any specie remains in the country. Their repeal would, however, in a few years also create a national bankruptcy, which would be followed by great misfortunes to the community, and put an effectual limit to a free corn trade. Price, as we have often had occasion to mention, is merely a relative term, and any article, *at the same price*, may be dear in one locality and cheap in another. Bread in Paris, at even one penny a pound, is dearer than the same quantity of bread would be in London at twice that price, because in London the means of the consumers to pay are more than twice larger than they are in the capital of France. Where population abounds, the wages of labour must from necessity be regulated by the value of the necessaries of life; and this the British labourer knows full well. At present, in Great Britain, on the average of years, productive employment can be easily and always obtained for the entire population, unless when excessive importations of foreign food render money scarce and dear, and consequently cause at home all speculative operations to cease, and all internal improvements to be for a time, at all events, postponed. The repeal of the corn laws, it is perfectly well known, must throw many thousands of families, at present well supported by their agricultural pursuits, entirely out of employment, and they would be compelled to fall back upon the manufacturing districts for support; and thus would this almost insane act, so far from relieving, greatly increase the depression in wages so much now complained of in all the manufacturing districts. This would, however, be only a small part indeed of the injury which a free corn trade with foreign nations would inflict on all the trading classes of society. The home demand for manufactured goods would be materially depressed by the altered circumstances in which the landed interest would be placed by withdrawing from their produce all legal protection. Merchants boast that they annually, even under existing circumstances, export to foreign nations British products and manufactures to the extent of fifty millions sterling; but this must be far under the consumption of the home market, which, supposing each person in the community to consume on an average only to the extent of five pounds sterling yearly of manufactured goods, must be nearer two hundred millions sterling than one. The repeal of the present corn laws would very materially affect this, the best market for the consumption of

British manufactured goods; and the workmen are aware of this fact full well, and consequently they hearken only with contempt and derision to the sentiments of the anti corn-law writers on this subject, knowing that there can arise, from a free admission here of foreign grain, no increase in the amount or in the value of British goods exported to those countries from which the foreign grain may have been received, and that the wages of labour must be in a considerable degree regulated therefore by the home consumption, which can alone be increased or even maintained at its present amount, by depending as much as possible on the supplies of agricultural produce at home being rendered fully equal to the home consumption. The importance of the corn laws, even as they at present are constituted, to all the industrious classes of British and Irish society, has also been well illustrated by the universal benefit which has been received from them within the last six weeks. It is but too well ascertained now, that the late crop generally, and more particularly the wheat portion of it, is most materially deficient, as well in quantity as in quality, and the value of bread has been kept moderate entirely by the large supplies of foreign wheat which were received into consumption during the month of September last. The corn laws are so admirably constructed, that no sooner was the deficiency in the wheat crop discovered, than they in a manner repealed themselves, and admitted, at a nominal duty, little short of ten millions of quarters of foreign grown wheat and flour into our markets for sale. Had it not been for this most seasonable relief, the best samples of English wheat would now have been worth at least 6*l.* per quarter, and bread would consequently have been double its present value. When this large quantity of wheat was thrown upon the market, a decline consequently occurred in the value of British wheat; and the material depression occasioned by this fact in the average prices, caused a correspondent advance in the rates of duty payable on foreign importations, and they have again reached to a prohibition—for a time, at all events, of any further foreign supplies being received for immediate use. After most amply protecting, therefore, the interests of the great body of consumers in the month of September, in that of October they extended their aid again to the home agricultural interests, and threw their beneficent shield over the value of the produce of our own fields. The average prices of wheat during the last month were reduced likewise under the intrinsic value of wheat generally, by the great portion of the supplies being of extremely inferior quality, which was sold consequently at very low samples. Of fine samples of the last crop, few as yet have appeared for sale, and the decline in them has not been nearly so considerable. Before the conclusion of October, however, a reaction again occurred in the value of all descriptions of wheat, occasioned by the very unfavourable weather which interrupted the sowing of the winter wheats generally, and even partially prevented the preparation of the fields for their reception; and in the north of England, in Scotland, and Ireland, the gathering of the oat and pulse crops was in a great measure retarded by almost continued falls of rain. Much injury must have been done in all the late agricultural districts by this unfortunate circumstance, and the previously existing gloom was thereby also very materially increased everywhere. The weather, however, after the middle of the month, again underwent a considerable improvement, and the fields now will be speedily cleared of all descriptions of grain and pulse. Should it be dry for a few weeks now, the condition of even the worst samples of wheat will be materially improved, and will tend to raise the average prices to those rates, which will again reduce the duty chargeable on foreign wheat. Little short of half of the large quantity of foreign grain entered for home consumption in September last, has already been sold for mealing purposes; and there is almost a certainty that a large quantity must still be imported from abroad to make good the deficiency in our last crop, before the next one can be brought into the markets for sale. Unfortunate as this aspect of the trade is to the agricultural interest, it is doubly so to commerce and manufactures. Next harvest, however, should it be a favourable one, will partially remove the evil; for in the prosperity of agriculture must the restoration of trade to a healthy and sound state mainly have its origin, and a good and productive harvest alone can render agriculture prosperous. Important however as the corn laws are at present to all classes in the community, their prospective benefits are still far more important to the British empire, when, by their protective influence, the science of agriculture will be better understood than it is just now, and when many millions of acres of land, now almost in a state of nature, shall have been converted into corn fields, and rendered eminently useful to the people. Under the protection of the corn laws, the United Kingdom may, and actually will, produce food for a much larger population than she now contains; and then the wealth of the nation will remain within her own bounds, and will increase the real happiness and welfare of her inhabitants. Money will not then be rendered scarce and dear by remitting it to foreign communities in payment of foreign grown grain. The capital arising out of the industry of the people, will, under the influence of the corn laws, be retained within the empire and its colonies, and will be in continued circulation—promoting farther internal improvements, and increasing the wages of the labourer. Instead of possessing a starving surplus population, and annually transporting thousands of industrious families to our colonies and foreign possessions for the cultivation of lands now in the wildest state in which nature can form them, the redundant population then will, and may even now, be most productively employed in converting the morasses and banks of rivers and lakes at home into most valuable tillage fields. In this channel, there is a boundless space for improvement; but without the protection of the corn laws, such large undertakings cannot be profitably prosecuted. The corn laws, in fact, are more important and more favourable to the manufacturing and commercial productive labourers, than they are to the agricultural interest itself. For the latter, the fields can, under all circumstances and in all times, always yield in the greatest abundance all the necessaries of life at any rate; but when commerce decays—and to place confidence in foreign nations for supplies of foreign food, is the sure forerunner of manufacturing distress—the operatives and artizans of all denominations are, we may say, almost the only sufferers. The entire repeal of the corn laws, or even any fixed duty, would entail on them annually, as we have already mentioned, all the misfortunes which the late bad harvests have done, and they are therefore too wise to call for any alteration by which they may be materially injured; for the doctrine held out by the Anti-Corn-Law Leaguers—that to grow less corn at home, must be attended by a large increase in the live stock at the present time to be found throughout the empire—is wholly without foundation. That the importation of foreign grain should be rendered subservient to the public expenses of the British empire, admits not of any contradiction; and that the duty charged on it should, at all events, be in some measure in proportion to the taxes paid by our producers of it at home, must be obvious to every unprejudiced mind. There is, consequently, a fault in the present law—by which nearly two millions of quarters of foreign grain were permitted lately to come into home consumption at perfectly nominal duties. We are of opinion that this part of the corn act may be altered with great advantage to all classes in the community, by fixing the minimum duty at 5s. per qr., to be charged when the average price of wheat is 65s. and upwards per qr. Some alteration of this description, we are sure, would be satisfactory to the landed interest, and it would answer to the consumer all the purposes of a fixed duty being placed at all times on the importation of foreign grain. The bonded wheat should always be charged with the duty of the day in which it is placed under the Queen's lock, and not, as is the present system, with the duty of the day when it is entered for home consumption. A very considerable addition may thus be made to the public revenue. All other descriptions of foreign grain to be charged of course at proportionable rates. This addition to the national income would be cheerfully paid by the foreign *grain land* proprietors, and not one penny of it would fall on the British consumer. It would, like freight, sea insurance, &c., be considered as a part of the expenses of importation, and the British importer would cause his purchases abroad to be made cheaper *by the duty to be paid here*, else he would not purchase at all. The information received from the different grain-exporting districts throughout Europe, since our last publication, is in due course of post, and, in the present state of the corn trade here, and the proposed alteration in the corn laws, is certainly important. From Dantzig, and the other ports in the Baltic from whence Polish wheats are chiefly exported, we learn that a considerable amount of business had been done during the last month, but at high prices. It is reasonable to expect that these purchases will, at all events, find their way out of the Baltic before that sea be closed by the weather, and they will finish the trade with this quarter during the winter months. In the spring and summer months, however, the foreign proprietors of grain promised themselves an extensive and valuable intercourse with this country, for our future want of grain was perfectly known and understood amongst them. At home, the consumption of wheat amongst their serfs and boors is small indeed; and as the fee simple of wheat lands throughout Poland is on an average not worth three pounds sterling per acre, whatever price is obtained for their wheat in England after the payment of freight and importation expenses here, is almost a clear profit to the proprietors of land throughout that most productive country. Rent is, we may say, absolutely unknown throughout the wheat-producing districts in Poland. The transit expenses of their produce, from the interior to Dantzig, Elbing, or to any of their places for shipment in the Baltic, never exceed 8s. per qr., and is generally not more than five shillings. At the port of shipment, perhaps 2s. per qr. more may be expended in placing it free on board ship. These expenses, added to the trifling annual value of the land, and the small expense incurred in its production, render the sale of it at Dantzig, even at 20s. per qr., a profitable transaction for the foreign proprietor, and at 60s., the latest quotation, the profit becomes most splendid. It is little wonderful, therefore, that to open the British markets to the consumption of Polish wheat, which is not the food of the people there, is hailed there by the landed interest with the utmost delight; for it must immediately fill their coffers with specie in exchange for the largest portion of their crops, with which additional lands, now useless, but of which many millions of acres remain in a perfect state of nature, may hereafter be converted into wheat fields with a view to the increased demand which, by the repeal of our corn laws, or by a fixed duty payable on importation, must annually be made on their agricultural industry. These serfs and field labourers cannot at present afford the use of British manufactured goods, and, until they change their nature, never can nor are they in the habit of consuming anything; but the coarsest quality of food. A very little reflection is only necessary to prove therefore, even to the anti-corn-law leaguers themselves, that a commerce of this description must ultimately be attended by most ruinous consequences to the shipping and manufacturing interests throughout this country. The manufacturers are, we freely admit, a most important body, because they productively employ a multitude of the population; but it is not in a barter trade of corn and goods that they should look for a profitable investment of their capital. After the home market, our colonies, our foreign possessions and all southern states, are the great consumers of their goods; and to encourage them is of far greater importance to their future prosperity, than a free corn trade ever can be.

From all the ports in the north of Europe, and without the Baltic sea, the information lately received is equally interesting, being nearly similar to that to which we have now alluded. The deficiency in the British crops, and the proposed repeal of the British corn duties, were justly supposed by the agricultural property proprietors in all these ports, as the certain forerunner of their prosperity. A good deal of wheat continues to be forwarded here from Hamburg and other ports, and it will be continued so long as the internal navigation is not obstructed by the weather. In payment for their grain, not one additional cargo of manufactured goods has been or will be forwarded to that part of Europe. In the precious metals chiefly will the exchange be made; and as this trade must be large before the next harvest can assist the necessary wants of the people, the drain on the stock of specie within the British Empire must be extensive, money must consequently become scarcer, and the annual interest payable on the loan of it dearer even than it is at the present moment. This will furnish a fair opportunity to estimate the evils which the repeal of the corn laws would certainly entail on this country; for the state of the last crop here must cause their virtual repeal again sometime before the conclusion of the present corn season.

At the latest dates from the corn districts bounded by the Mediterranean and Black seas, purchases of wheat to a considerable extent had likewise been made, with a view to the British market, and ships being scarce, freights were then exceedingly high. From this quarter also, large supplies of wheat and beans may be depended on, should circumstances here require them; and we shall thus obtain as much grain as Europe could have furnished us with, even had the corn trade been unrestricted—proving thereby most accurately, that the principle on which the corn laws are founded, produces results equally favourable to the great body of consumers, as they are protective of the agricultural interest and of the wages of labour themselves. Reciprocity in this description of trade is impossible—unless there be some degree of equality in means also. In this instance, England possesses the wealth, whilst the European growers of wheat can neither afford to consume wheat, nor to dress themselves in British manufactured cotton or woollen goods. This prevents a barter trade, and must continue to do so until European agricultural labourers elevate themselves to a level with those in the United Kingdom, or our manufacturers fall to a par with those on the European Continent. An approximation must previously be made in manners and customs betwixt the Polish serf and the free Englishman, of which there is neither an immediate nor a distant prospect at the present time; and not till then can any reciprocity in commercial dealings exist among nations.

From the United States of America, commercial intelligence has been received to the middle of last month. Wheat and flour had been, and continued then to be, forwarded to Europe in considerable quantities; and as soon as the October grain reports from this country reach the American Union, the shipments to great Britain must become more extensive than they previously had been. The letters, in many instances, are filled with speculations on the numerous advantages which agriculture throughout the Republic, must reap from the proposed fixed duty, and afterwards, the unconditional repeal of our corn laws. There, the agricultural interest, particularly on the banks of the Ohio, continued to boast that they possessed the means to supply all Europe with all the necessaries of life; and John Bull, in the most friendly manner, is recommended no longer to take the trouble of cultivating his own fields. The inhabitants of the United Kingdom are, when this mighty change is effected, to amuse themselves with hammering hot iron in front of a furnace, and in labouring under ground in mining operations, whilst the Americans are to feed them in exchange for their labour. Our trans-atlantic brethren are prepared to undergo the free and healthy employment of the fields, and Englishmen are to perform the labour of Peruvian slaves. Reciprocity of this description is positive absurdity; and yet characters are to be found in this country to vindicate the principle of what they are pleased to call cheap provisions, occasioned by free trade. The workmen in this country are practical men, however, and are far better informed than to adopt a theory, to reduce which to practice would reduce themselves to slavery. Cheap provisions, when produced entirely by an abundant crop at home, are, and always must be, attended by increased employment and higher wages; whilst cheap provisions—occasioned by overwhelming supplies of foreign produce—must universally reduce the wages of labour in the British empire; for they withdraw from circulation large sums of money, which otherwise would be embarked in new undertakings at home, and in additional internal improvements.

The barley crop is reported to be an average one in quantity, but exceedingly deficient in quality. Malting barley consequently, since our last review of the state and prospects of the corn trade, has not been equal in any manner to the demand; and the value of this description would have been much higher than it now is, had the deficiency in the supply not been most amply made good by the introduction of a large quantity of foreign barley into the different markets of consumption on the payment of a moderate rate of duty. It is not, therefore, in the article of wheat alone that the principles of the corn laws are beneficial to the community—for in barley also their good effects are at present very visible; and beer, the favourite beverage of the people, is prevented from advancing in price by this cause alone. For the interests both of agriculture and also of the great body of the people, however, heavy malt duties render the value of beer far too high, and the consumption of barley is not to half the extent which it ought naturally to be, were the charge of duty on malt only one shilling per bushel instead of its present heavy rate. Nothing can be more true than that heavy taxation defeats its own purpose; and in no article under the excise laws is this fact more perfectly illustrated than in that of malt. In many preceding numbers of this magazine it has been our duty to direct the attention of our various and numerous readers to the many injuries which the present malting system entails on the inhabitants generally of the British Empire. There is in many parts of the United Kingdom a large extent of sandy soil which is admirably calculated for the growth of malting barley, but which is at present, however, of very little utility, because for the production of barley alone could its cultivation be rendered profitable. To reduce the malt duty from its present excessive charge to one of one shilling per bushel, would render the cultivation of from one to two millions of acres of these light lands necessary, in addition to the quantity already under this description of tillage. That the consumption of malt ought to be three times larger than its present amount, must be made perfectly evident by the slightest reflection on the state of the population, and the small quantity of malt latterly consumed by the public brewers annually. The demand now in this quarter is limited to something less than four millions of quarters; and the beer extracted from this quantity is really but scanty allowance, when divided amongst thirty millions of human beings, who consume this beer, either at home, in the Colonies, or in foreign nations. The fact unfortunately is, that one-half of the population cannot afford the use of beer generally, and the malt duty rendering the adulteration of beer a profitable trade, a vast proportion of those who can afford the use of beer, suffer in their health and impair their constitutions by consuming beer of very inferior quality. The reduction of the malt duty alone to a moderate standard, can remedy these unnatural abuses; for by an alteration of this great importance, an additional national wealth must arise from the increased culture of barley, more than adequate to the additional expense incurred by the annual consumption of three times the quantity of sound beer now used throughout the Empire. To raise the quantity of barley consumed for brewing purposes from four millions of quarters to eight or ten millions, must be a vast addition to the annual wealth of the nation—will give field labour to many thousands of families more than are employed in agricultural pursuits under the present restrictive system of over-taxation, and will enable millions to enjoy the moderate use of beer, who are now deprived of that, to them, luxury. Experience has already shown the benefits which did result from the reduction which the Duke of Wellington's Administration effected in the malt duty. It was at that time reduced from 34s. 8d. to 20s. per quarter, and in two years afterwards duty was paid on double the quantity of malt. It is, therefore, no theory to predict similar consequences from similar causes. A charge of one shilling per bushel on malt will pay more into the Treasury than the present high duty system does, and will much more than double the present consumption of beer. One million and a half sterling may be added to the rents of land necessary for the production of the additional quantity of barley, beer will be more generally used amongst the great mass of the people, and the increased wealth arising from the cultivation of land at present of scarcely any value will much more than pay for the expense of the increased barley consumption. In short, it is not of the amount of duties charged on manufactured barley that the people have any right to complain, amounting though they do to little short of one quarter of the national revenue, but it is of the manner in which these taxes are imposed, limiting as they do the consumption, and confining the people generally to much less than temperance allowance; but we have already shown that the barley revenue may be increased by an alteration in the system, and that the application of fair duties levied on the importation of foreign grain here, if deducted from the malt duty, must confer very signal advantages on the community at large.

During several years now the distillery trade has not been in a satisfactory state, many of the most eminent in that line having latterly ceased working for a time, to save the large capitals which are from necessity embarked in this important and scientic profession. Some improvement, however, may arise this year in this quarter, out of the state of the last barley crop, which is universally stated to be large for the quantity sown, and the quality in general is not calculated for malting purposes. Distilling barley, therefore, must be plentiful, and its value moderate, should the inferiority of the wheat crop, and also the damage done to potatoes by the October rains, not create a demand during the season for these descriptions for mealing purposes. It is however not against the value of barley heretofore, that the English distiller has his chief cause of complaint. Like the maltster, he is by far too heavily taxed, not less than three hundred per cent. duty being, by the present laws of excise, imposed on his manufactured article. In this system of overwhelming taxation arises the demoralizing employment of smuggling, by which our home spirit manufacturers are deprived of remunerating markets, and by which the revenue is defrauded of a million or two sterling annually. Ten millions of gallons of foreign spirits are annually consumed, on which no duty whatever has been collected, and to manufacture which at least half a million of quarters of British barley would be requisite, was it produced by our distillers at home. This is almost the first cause of many crimes committed within the United Kingdom. It is in the extreme hostile to the great moral virtue of temperance, placing as it does drunkenness on her right hand, and teetotalism on her left; and the equalisation of the spirit duty to 5s. per gallon throughout the United Kingdom is the only chance now existing of expelling this nefarious trade from the country. The barley trade and the monetary system suffer likewise by the fiscal rules and obstructions which are imposed on the science of the British rectifier. We annually pay large sums of money to French distillers for French brandies legally imported. These brandies, colonial spirits, Geneva, and Irish and Scotch whiskey, are very properly permitted into general consumption at those strengths which suit the palates of the consumers and the pockets of their importers into England, whilst the law limits the British rectifier of brandy to seventeen under proof. In fact, it is not much above the average strength of Irish punch; and therefore, however excellent may be the flavour, it cannot be applied to this purpose, unless without water and in its neat state. Were the English rectifiers only allowed to use their science in the regulation of the strength of their brandies, they would speedily supersede the use of French brandies, (the best of which are not superior in flavour, and certainly much inferior in wholesomeness to those of home manufacture) in the United Kingdom altogether; they would destroy the trade of the smuggler, and with it suppress materially the vices of teetotalism and drunkenness, and the revenue would be much increased. In fact, the cultivator of barley, and its manufacturer, cannot be placed in a safe and in a healthy position until a radical change be effected in the amount and the mode of collecting the public charges on malt and on English spirits, to which vitally important subject it is to be expected that her Majesty's Ministers will direct their best and serious attention; for much evil, and not one benefit, originates in the existing system of taxing barley, being injurious in the extreme to the best interests in the empire.

The oat trade during the last month has continued in a very healthy state, and prices have been moderate to the consumers, though at the same time sufficiently remunerative to oat tillage. The encouragement which the large British markets have held out to the Irish producers of this most important article, is the chief cause of this satisfactory appearance of affairs; and it is to the protective influence of the corn laws that the agricultural interest in Ireland is solely indebted for the great progress which agriculture has latterly made in that portion of the United Kingdom. There annually is the quality of grain improving, unless when, as has unfortunately been the case this season, the elements prove to be unpropitious; and the quantity produced on each acre is increasing. In addition to these great advantages, a great quantity of previously waste lands are yearly now converted into cropping fields, adding thereby very considerably to the internal wealth of the sister island. The repeal of the corn laws, or even to fix an importation duty on oats, would, in a few years indeed, place an insuperable bar to any further agricultural improvement in Ireland; because all our oat markets would be far more easily supplied from the opposite northern coast of Europe than from Ireland, or from even the north of Scotland. Instead of employing thousands of British seamen, and thousands of tonnage under the British flag, the oat trade would, by any alteration in the principles of the corn laws, be carried on under foreign flags and by foreign seamen, and the freights would be remitted to the continent in specie, on board the same vessels in ballast, in which the oats had been previously imported. This specie would never return into the empire, and would annually be a national loss. The alteration in the corn laws would cause the growth of oats also in Ireland to decline in a very material degree, and would thus withdraw from the people there a considerable quantity of agricultural employment. This season the oat crop is again large, but in many districts it is considerably injured; still we expect that quantity will make good the deficiency in quality, and that the money which the consumers pay for oats will be expended at home amongst the British and Irish farmers, by whom it will be kept in active circulation amongst the manufacturing and industrious classes of society.

Peas and beans have supported their value during the last month, the supply having been scarcely equal to the demand. It is now almost certain that both of these articles will, at least for some time to come, fully maintain their present quotations, unless some impression should be made on the different markets for their consumption, by large supplies of them from abroad being admitted for home use on the payment of only moderate import duties. Both of these articles have suffered considerably by the very unpropitious state of the weather—beans particularly so, which had not been secured previous to the late heavy and almost continued rains during the first three weeks in October last. In some respects, however, these rains were favourable; for the grass fields, turnips, and all descriptions of green cropping, have been materially improved by them; and for the present, therefore, there is at all events, and also for some time to come, abundance of provender for all descriptions of live stock. To the potato crop, however, it is generally feared that the late wet weather has done considerable harm, although the extent of it cannot be ascertained until the fields be finally cleared of this article. A month ago our prospects in this quarter of plenty were brilliant, but they have unfortunately since then suffered a great alteration. In prices, however, no material alteration has yet occurred; for the quantity, at all events, is unusually abundant, and an expectation therefore may be naturally entertained that from this source the deficiency which events have caused in quality may in some measure be made good. This article in general utility is second in this country only to the wheat crop, and any misfortune which might happen to it in the fields must be followed by incalculable injury to every class in British society. It is therefore most sincerely to be hoped that the mischief done in this quarter may eventually turn out to be much less serious than is at present apprehended.

CURRENCY PER IMP. MEASURE.

OCT. 25.

	Per Qr.			Per Qr.	
WHEAT, Essex and Kent, red 60	62	68	White 60	72	74
Irish	56	60	Do.	62	64
Old, red 72	74	76	Do.	72	80
RYE, old	34	36	New....	36	38
BARLEY, Grinding 30 34 Malting	36	40	Chevalier	36	38
Irish	27	28	Bere ...	25	28
MALT, Suffolk and Norfolk	60	62	Brown..	50	54
Kingston and Ware	60	62	Chevalier	66	68
OATS, Yorksh. & Lincolnsh., feed	24	26	Potato ..	27	28
Youghall and Cork black	23	24	Cork, white	24	25
Dublin 21	22	24	Westport	24	25
Waterford, white 18	20	23	Black ..	22	23
Newry	24	25			
Galway 15	17	20			
Scotch feed	25	26	Potato..	27	28
Clonmel	23	25	Limerick	23	25
Londonderry	23	24	Sligo ..	22	23
BEANS, Tick, new	30	35	Old	—	—
PEAS, Grey	36	38	Maple..	40	42
White	38	42	Boilers .	38	40
SEED, Rape......	36*l.*	40*l.*	Irish..	32*l.*	34*l.* per last.
Linseed........	48	56			
English Red Clover, fine,	—	—	per cwt. nominal.		
White	—	—			
Mustard, White	16	—	brown	18	19 per bush
Tares, old	36	40	new	56	60 per qr.
FLOUR, Town-made	62	—	Suffolk	—	50 pr sk. of 280 lbs.

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic		63	66			
Hamburg		58	60			
Rostock		56	60			
BARLEY		22	25			
OATS, Brew	19	22	24	Feed ..	14	16
BEANS	28	30	32			
PEAS		27	30			
FLOUR, American, per brl		34	—	Baltic ..	34	—

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Oct. 22nd, 1841.

AVERAGES from the corresponding Gazette in the last year, Friday, Oct. 23rd, 1840.

	s.	d.		s.	d.
WHEAT	62	3	**WHEAT**	62	5
BARLEY	31	6	**BARLEY**	36	1
OATS	21	8	**OATS**	23	1
RYE	38	3	**RYE**	36	11
BEANS	38	6	**BEANS**	43	6
PEAS	38	6	**PEAS**	43	3

IMPERIAL AVERAGES.

	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
Week ending												
Sept. 10th ..	71	2	39	10	23	6	39	1	44	8	44	8
17th ..	64	8	39	2	23	6	37	11	44	10	47	9
24th ..	63	4	39	5	22	5	38	5	45	2	45	11
Oct. 1st ..	61	9	33	0	22	0	38	7	42	11	38	2
8th ..	61	6	31	10	21	7	35	10	40	5	38	1
15th ..	62	3	31	6	21	8	38	3	38	6	38	6
Aggregate Average of the six weeks which regulates the duty	64	1	35	9	22	5	38	0	42	9	42	2
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	22	8	9	4	13	9	12	6	6	6	6	6
Do. on grain from British possessions out of Europe	0	6	0	6	2	0	0	6	0	6	0	6

PRICES OF SEEDS.

OCT. 25.

The transactions in Cloverseed were very unimportant there being scarcely any sellers at present.

Mustard seed found purchasers at our quotations. Carraway was held firmly at previous rates. The demand for Tares is nearly over, prices now range from 6s. 6d. to 7s. 6d. per bushel.

Canary seed was scarce and again dearer.

Linseed, English, sowing	54	59				
Baltic	—	—	crushing	48	54 per qr.	
Mediter. & Odessa	50	54				
Large, foreign....	—	—				
Clover, English, red	—	—	white	—	— per cwt.	
Flemish	—	—	do..	—	—	nominal.
New Hamburgh ..	—	—	do..	—	—	
Old do.	—	—	do..	—	—	
French	—	—	do..	—	—	
Hempseed, small	40	45	large ..	48	50	
Coriander	10	16	old....	16	18 per cwt.	
Mustard, brown, new ..	10	14	white..	9	13 pr. bush	
Trefoil	16	28				
Rapeseed, English new..	36*l.*	40*l.*				
Rye Grass, English	30	42	Scotch	18	40	
Tares, winter	—	—	New..	6	7s 6d	
Canary, new	100	105	fine	110	115	
Carraway, old	50	52	new	48	49	52

PRICES OF HOPS.

BOROUGH, OCT. 25.

In the Hop market there is not much activity at present; the fairs at Weyhill, Maidstone, and other parts not having gone off briskly, or in a manner to encourage speculation. The crop, some think, will fall below the estimate, and this induces the holders to keep very firm, in spite of the limited demand, in anticipation of a future improvement. The duty has but few backers at 140,000*l.* to 145,000*l.* The official statement will be out in about a month. Prices much the same.

	East Kent.		Mid. Kent.		Weald of Kent.		Sussex.		Farnham.
	s.	s.	s.	s.	s.	s.	s.	s.	s.
Bags, 1836	Nominal		—		—		—		—
Pocks. 1836	—		—		—		—		—
Pocks. 1837	None		None		None		None		—
Bags 1838	Nominal		—		—		—		—
Pocks. 1838	—		—		—		—		—
Bags 1839	80 ..	95	80 ..	95	80 ..	95	80 ..	95	—
Pocks. 1839	—		...		—		—		—
Bags 1840	100 ..	115	100 ..	115	100 ..	115	100 ..	115	—
Pocks. 1840	—		—		—		—		—
Choice do..	112 ..	126	112 ..	126	112 ..	126	112 ..	126	—
Do. 1841	140 ..	200	140 to 180 to 190		115 ..	140	115 ..	130	—

POTATO MARKET.

SOUTHWARK, WATERSIDE, Oct. 25.

The Potato market during the greater part of last week has been shortly supplied, owing to the prevalence of contrary winds and rough boisterous weather, preventing the arrival of vessels from the north, as well as from the Channel Islands. But a change has now taken place, which has caused a large supply to come into the port of London from all quarters, consisting of the following varieties, viz.:—from Yorkshire, 650 tons; Scotland, 520; Jersey and Guernsey, 455; Devons, 265; Kent and Essex, 630; total, 2540 tons. In consequence of the shortness of supply last week from the above causes, and many of the buyers being out, the demand at present is brisk for best samples of York, Scotch, and Devons, at the annexed quotations.

PRESENT PRICES AS ANNEXED.

	s.		s.	
York Reds	70	to	—	per ton
Scotch	70		—	
Devons	70		—	
Jersey and Guernsey Whites	50		—	
Do. Blues	55		—	
Kent and Essex Whites	50		60	

WOOL MARKETS.

BRITISH.

Oct. 25.

Just now the trade is in a state of great uncertainty, and the amount of business on that account is limited. Should favourable news transpire concerning the American disturbances, we should no doubt see an advance in Wool.

	s.	d.		s.	d.
Down Teggs	12	10	to	13	10
Half-bred Teggs	13	0		14	0
Down Ewes and Wethers	11	0		12	0
Down Hogs	11	0		12	0
Down Wethers	10	0		10	10

LEEDS, Oct. 22.—We are not able to notice any new feature in the foreign wool trade during the past week. The amount of business which has been done, and the prices obtained, have been about on a par with those of last week.

LIVERPOOL, Oct. 23.

Scotch.—There has been less demand for Laid Highland Wool this week, which may be accounted for by most of the parties having supplied themselves when down at the public sale last week. There is still a good inquiry for White Highland, which is scarce. We have heard of no transactions in Crossed or Cheviot this week, which may be accounted for as above.

	s.	d.		s.	d.
Laid Highland Wool, per 24 lbs.	8	6	to	9	0
White do. do.	13	0		14	0
Laid Crossed do..unwashed..	9	6		10	6
Do. washed do.	10	0		12	0
Do. Cheviot unwashed do.	9	9		12	0
Do. washed	14	6		18	0
Cheviot white, washed	22	6		24	0

FOREIGN.

CITY, Oct. 25.—The imports of Wool into London during the past week were 1,929 bales, of which 1,693 were from Sydney, 221 from Germany, 12 from the East Indies, and three from Portugal. There is no great extent of business doing just now, as there are public sales of about 10,000 bales of Colonial coming on early next month, perhaps by the 4th.

Some very lugubrious statements are in circulation respecting a great falling off in our export of Woollen goods, but it is to be hoped they are not exaggerated for party purposes. The Wool manufacture abroad is undoubtedly flourishing.

Accounts from Moscow of the 17th ult. state, that at the fair of Neshegorodschen the quantity of goods brought forward was considerably greater than at that of last year, and that the sales were also larger, especially in Cotton fabrics. A good many Woollen articles were purchased for the consumption of the interior provinces, and also for the Kiachta trade there was an increased business done.

At Elboeuf, France, about a week since a good business was doing in Wools. Ord. qualities were in demand and firm.

At the public sales of Wool at Amsterdam, on the 14th inst., 65 bales out of 391 Portuguese went at 96 to 131 cents.; 326 bales withdrawn at 95 to 150 cents.; 5 bales Italian brought 129 to 140 cents.; 2 bales superior Danish sold at 142 to 166 cents.; 1 bale washed Smyrna sold at 70 cents, 5 do. withdrawn at 81 to 84 cents.; 14 bales in grease withdrawn at 42 to 70 cents., and 5 bales German withdrawn at 120 to 130 cents. Second sales.—36 bales superior German sold at 163 to 180 cents, 7 Portuguese at 84 to 102 cents., 6 German Pael at 126 cents.; 23 bales coarse at 64 to 90 cents.; 9 Smyrna at 14 cents.; 9 Russian at 69 to 70 cents.; 55 superior German withdrawn at 163 cents.; 10 bales of Portuguese sold at 120 cents.; 33 German Pael at 122 to 126 cents.; 6 bales Bosnia at 83 to 92 cents.; 11 Turkish at 87 cents.; 26 Smyrna at 99 cents.; 6 Russian at 69 cents.; 4 Smyrna, in grease, at 45 cents., and 13 bales Barbary at 44 to 45 cents.

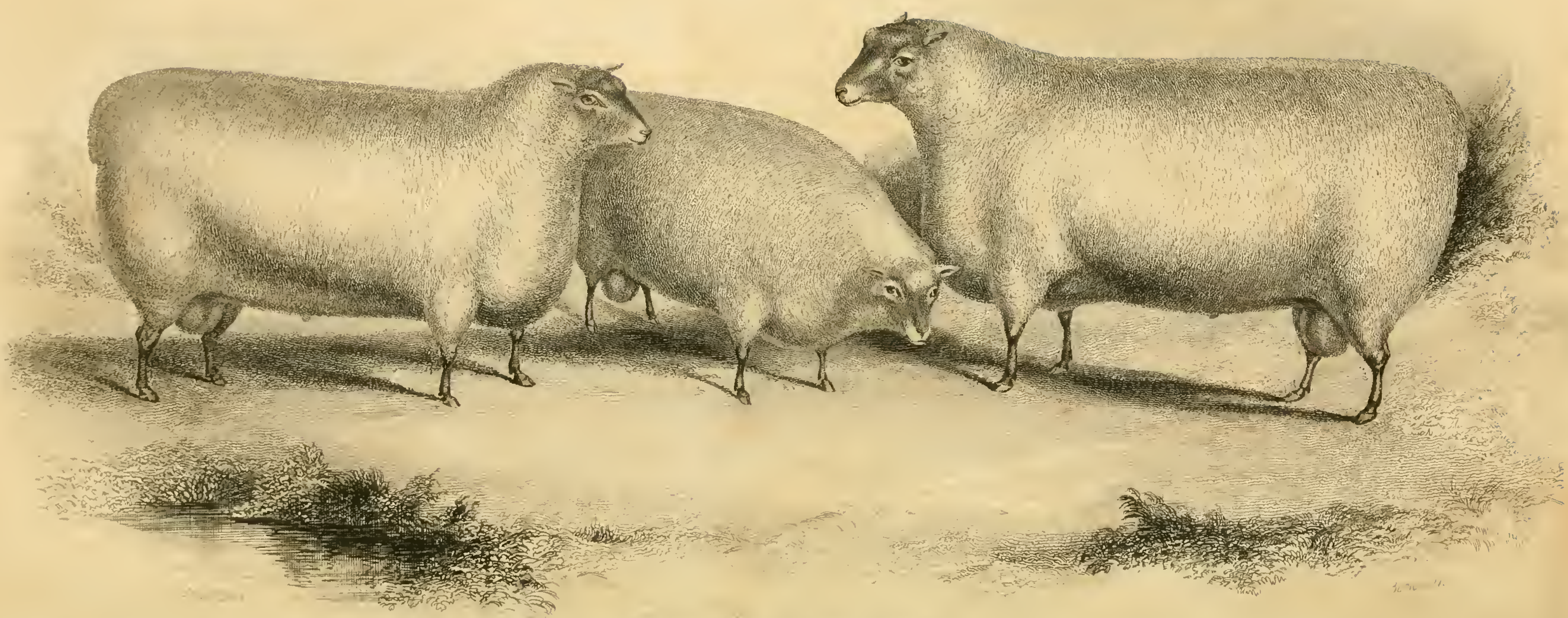
LEEDS, Oct. 22.—The general character of the news from the United States, and the anxiety connected with the present position of affairs with that country, together with the falling off in the demand for goods here, consequent on the advanced state of the season, have increased the caution previously evinced by the manufacturers in purchasing wool. Sales, therefore, have been very limited this week. From these causes also prices may be quoted a shade lower than three weeks ago.

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

Bone-dust, 21s. 6d. per qr. of 8 bushels
Half-inch ditto, 21s. per qr. do.
Rape-dust, 7*l.* 0s. per ton.
Rags, 4*l.* to 4*l.* 10s. per ton.
Graves, 5*l.* to 5*l.* 10s. per ton.
Gypsum, 38s. per ton.
Salt, 2*l.* 5s. dirty, 2*l.* 15s. clean, per ton.
Lance's Carbon, 12s. 0d. per qr.
„ Humus, 14s. 0d. „
Soap ashes, 10s. per ton.
Artificial Manure, 12s. per qr.
Poittevin's Patent Disinfected Manure, 13s. 6d. per qr.
Nitrate of Soda, 22s. 6d. to 24s. 0d. per cwt.
Nitrate of Potash or Saltpetre, 26s. 6d. to 27s. 0d. per cwt.
Willey Dust, 4*l.* 4s. per ton.
The Urate of the London Manure Company, 5*l.* s. per ton.
Alexander's Chie-fou, or Chinese Manure, 21s. per cwt.

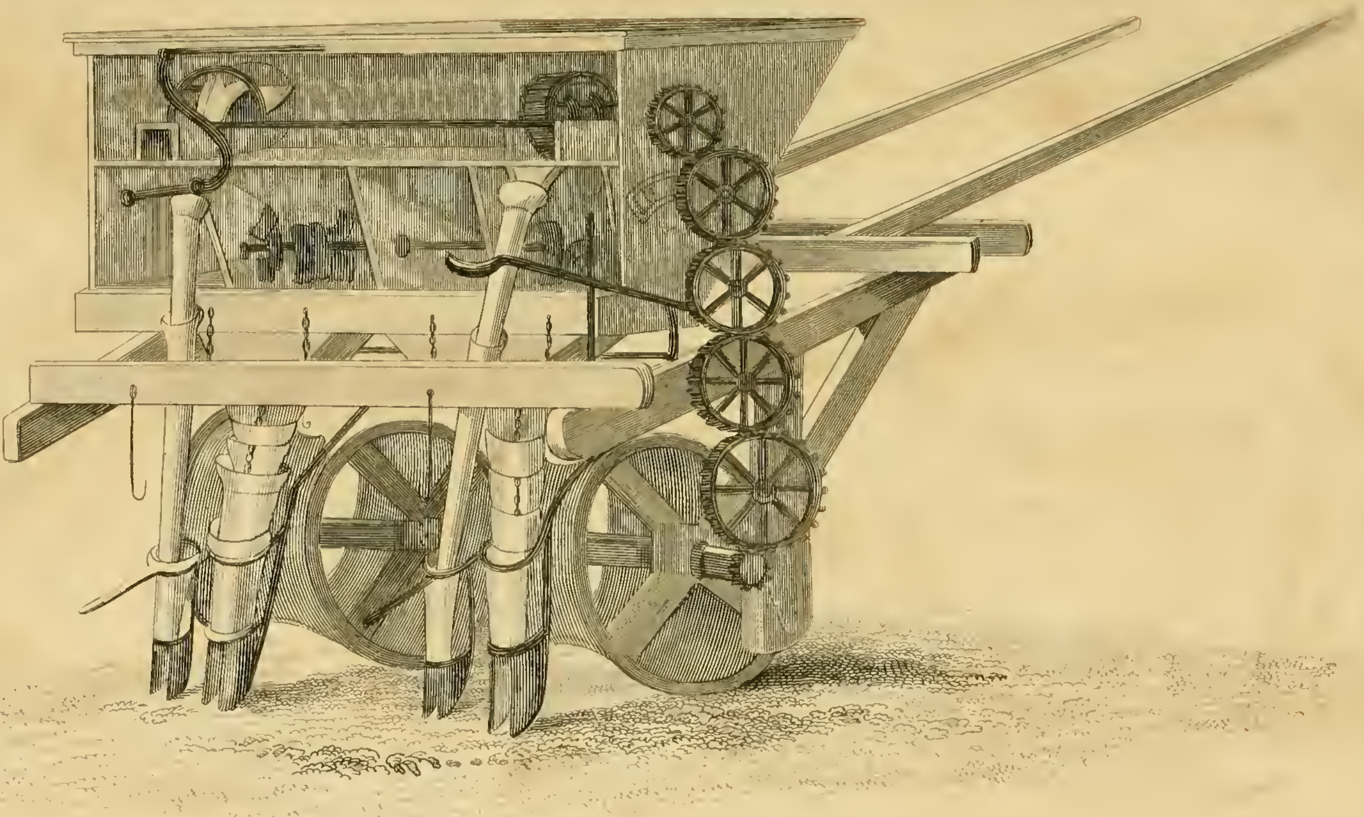
Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.



Three Southdown Rams

Bred by and the Property of Jonas Webb Esq.^r of Babraham, Cambridgeshire to which Prizes were awarded at the Meeting of the R.A.S at Liverpool, July 1841

London Published by Joseph Rogerson, 24, Norfolk Street, Strand, Dec.^r 1, 1841.



A Turnip and Manure Drill.

For which a Prize of 10 sovereigns was awarded to Mr. R. Hornsby, of Spittlegate, Grantham, Lincolnshire
at the Meeting of the Royal Agricultural Society of England at Liverpool, July 1841.

[illegible] Stephenson 24 Market Str [illegible]

THE FARMER'S MAGAZINE.

DECEMBER, 1841.

No. 6.—Vol. IV.] [Second Series.

PLATE I.

The Sheep which form the subject of our first Plate, are, two of them sixteen months old South-down Rams, and one twenty-eight months old, bred by, and the property of, Mr. Jonas Webb, of Babraham, near Cambridge. These Sheep were exhibited at the late meeting of the Royal Agricultural Society of England at Liverpool, and obtained the three first Prizes. The two former won the first and second Prizes as Shearlings, one Thirty, the other Fifteen Sovereigns; and the third also gained the first Prize of Thirty Sovereigns as the best Ram of any age. Mr. Webb stands now a successful competitor with the Sussex men as a breeder of South-downs. We understand that one of these rams was let to his Grace the Duke of Newcastle, at the extraordinary price of one hundred guineas for the season.

PLATE II.

The Drill, which is the subject of the second Plate, is a Turnip and Manure Drill, for which a Prize of Ten Sovereigns, as the best Drill for Turnips and Manure, was awarded by the Royal Agricultural Society of England, at the Liverpool Meeting, to R. Hornsby, Spittlegate, Grantham, Lincolnshire. This Drill, for Turnips and Manure, is very simple in its construction,—upon two rollers for ridge work, on a sliding principle, admitting of various widths, from twenty to twenty-eight inches apart; very easy to manage. Will deposit from one to six pounds of seed, and from four to one hundred bushels of any pulverized manures per acre.

ON LIQUID MANURE.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—The want of precision, the absence of almost all reflection in agricultural experiments, while various means are so obvious for improving the soil, and thereby increasing its productive condition, will I trust be some excuse for my offering these observations (imperfect as they are) on liquid manure.

I think it will be allowed that the subject considered separately is by no means so generally entertained as its importance demands, or as it deserves to be in an economical point of view.

In passing through farm-yards, over lands, and by roadsides, where immense heaps of dung have been laid for many months together, it must forcibly have struck many, how much of the essential part of the collected manure is lost by evaporation of its gases, and by absorption and dissipation around and underneath.

"It will bear the test of experiment, that one gallon of urine having undergone the putrefactive process will be found worth ten times its weight of rotten straw."* Instead of losing this essential article in the way that is now done, I propose that every occupier of land, and every one keeping cattle, should have in his farm-yard or premises a covered cistern or reservoir, into which the drains from his stables, out-houses, &c., should be conducted, and into which also should be thrown all refuse, soapsuds, &c., used in the house. The liquor thus obtained should at the proper times be taken in water-proof carts, having a suitable outlet made so as to allow the fluid to pass off gradually, much after the manner of water from a sprinkling pot, so as to divide it fairly over the land to be manured.

The advantage you obtain by the application of liquid manure, as compared with dung, is that a fluid containing saline and animal matter will more readily and more effectually decompose the carbon contained in the soil than dung itself—the end and intent of all manures or *amendments* of the soil.

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* De Fellenburg.

I find that the *nitrate of soda* so much in vogue is said to cost between twenty and thirty shillings per cwt.; it has doubtless those essential qualities capable of improving lands. Suppose then that you want to imitate this nitrate of soda at the least possible cost in liquid manure, instead of using it in the dear and extravagant method, as is done at present. I propose that an iron furnace (say it may hold ten gallons) be placed over a fire in the open air, and into it should be put half a hundredweight of common salt; when the salt has become moderately hot, then add to it eight fluid ounces of aqua fortis. Upon stirring this mixture, a considerable portion of muriatic acid gas (chlorine) contained in the salt will escape in the form of vapour. After having mixed it pretty well, it may be thrown into the waterproof cart, and the cart to be filled with the urine, &c., from the cistern; and in this manner you have a liquid manure having for its basis the *nitrate of soda*.

To my mind no better method could be used in applying the *urate*, so highly spoken of by the French agriculturists, than by mixing burnt gypsum (plaster of Paris), to which a little aqua fortis may be added to make it more soluble, with urine collected as I have described. The article is readily and cheaply obtained; like lime is soon burnt, and made proper for use; in a state of solution is better divided, and its usefulness comes directly into action.

I have heard from farmers that "bones used as manure are so long buried before any sensible advantage is derived from them as manure, that they are therefore objectionable, and that bone dust is so very expensive that few are inclined to use it."

I would briefly suggest that much that is objectionable could be surmounted by the simple process of burning bones in the open air until they become white, and are easily broken into powder. When this is done, the powder may be put into a suitable vessel, and to it may be added a small quantity of sulphuric acid (oil of vitriol*), in order to set free the phosphoric acid from the lime contained in the bones. When this is done, it may be mixed with the urine in the same manner as directed for the liquid manure imitating the nitrate of soda. Thus, if bones or bone dust be a good and suitable manure, by this method you apply it most beneficially, and make it most economical.

I have not attempted to describe the peculiar soils or circumstances in which one or the other of these solutions is to be preferred, but have merely glanced at the subject in order to bring the attention of others to it, who are doubtless more able to treat it methodically and more scientifically, whose time is more at their own disposal, and whose interests are more immediately concerned in affairs of this kind than those of my own.

The readers of this Journal are well aware of the importance this subject holds in different countries on the continent, where soils which the English farmer would despise as unproductive and next to useless, are by the methods here spoken of made to produce crops equal to any in the most favoured spots of our own country.

I shall feel a satisfaction if what I have here communicated may be the means of advancing in the most trifling degree the interest of the farmer, or that it may in the slightest sense add to the improvement of agriculture.

JOHN ASHFORD.

Hinckley, Leicestershire, 15th November, 1841.

THE JERSEY TRENCHING PLOUGH.

SIR,—About a fortnight since, my attention was attracted by an anonymous article in your journal on the Jersey trenching plough that was exhibited at the Liverpool Show.

The writer fancied that if some one who had written in its praise, had been the manufacturer of the plough, and wrote it up *for sale*, he could not have written more strongly.

Thus are all our impressions fixed. The writer who objects to it, saw it probably on the first day's trial, when a thousand persons crowded on the horses, driver, and ploughman, and trod down the furrow slice as soon as it was turned—when, indeed, no one could form a sound opinion of its work; and I take occasion to object to this public mode of trial, when horses terrified by noise and crowds, a driver vexed and confused, and a ploughman pushed about and nervous, are to stamp the value of a new instrument.

The following day the plough did its work admirably, drawn by Earl Derby's noble team of six Suffolk punches, without a strain, and turned sixteen inches of soil.

The committee and others were witnesses; and one gentleman, who was only present the first day, has ordered the stoutest plough that can be made, to trench land intended for extensive plantation; others have been ordered for potato culture.

It may be interesting to state an instance of remarkable success from its use, which has come under the notice of the visiting committee of the Jersey Agricultural Society this week.

A piece of land, about two acres, which was in turnips and old ley the previous year, was manured in February with nine tons of stable dung to the acre. A trench was opened down the middle of the land; a small plough, with a pair of horses, turned the scurf and manure into the trench; the trench plough, drawn by eight small horses (four Suffolks, or Clydesdales would have sufficed), turned fourteen inches of clean soil on the manure. The potatoes, after the land had been harrowed, were set four inches deep; nine inches between the sets, and twenty inches between the rows. On the 22nd of April, they, on appearing, were harrowed, rolled, and soon after horse-hoed.

The committee visited the crop last week; and on hearing the report of Colonel Le Couteur, and Mr. Ingle, late of Lynn, who saw the produce of a perch forked out and measured, 581lbs. to 22 feet square, awarded it the premium. The produce was enormous, even for Jersey, being above twenty-two tons to the acre.

On another farm, cultivated nearly in a similar manner, the usual mode being to use the trench plough for potatoes and all long-rooted crops, the potatoes were taken up with Le Boutillier's paddle or prong plough—an improvement, a very simple one, has been made to it. The prongs which revolve had three teeth—they now have but two, which are found to revolve more rapidly, and to throw out the potatoes better; the draught is also considerably lessened. With this plough, drawn by three horses, a driver, a ploughman, and twelve pickers, eleven tons of potatoes were dug and loaded in one day.

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* The different acids here named are best obtained at the *manufacturing chemists* in large towns, as London, Liverpool, Bristol, &c., &c.

It is with confidence asserted, that if this system were adopted in all soils in Great Britain which admit of being turned ten inches, the crops of potatoes would be increased twenty per cent., and the subsequent ones much improved throughout the rotation. Let every farmer who sneers at a lesson coming from so small a spot, try the experimant on one acre with any two of his ploughs, only being careful that the trench is first of all well opened; and that the first plough takes the dung with a shallow furrow of three inches, and an inch wider than that which is to follow, which should only turn over as much *clean* soil as it may, no grass or dung whatever.

This will be an approximation to the Jersey trench ploughing, but will not do the work so effectually, yet the result will be conclusive.

Jersey, Nov. 12, 1841. A JERSEY FARMER.

ON FARM BUILDINGS, RAISING TURNIPS, &c.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

In last magazine I observed an engraving of a plan of a farm-yard at Goodwood, in Sussex, the seat of the Duke of Richmond. The square compact form which I like to see in plans of farm buildings is very well adapted, and with no waste ground, as is most generally the case in farmeries—one building stands here, and another there, and much unnecessary fencing is required to connect them, and the yards are consequently exposed, and want the shelter so desirable for stock.

In this plan, the houses very properly constitute the fences of the farmery, and afford more warmth and convenience than if they were scattered and detached. I observe that no cow shed is placed—but this want is, no doubt, owing to its being a manor farm; in which cases, the cows and the dairy are usually a separate concern, and the poultry also. A cow-shed may be placed fronting the pond, or on any side of the yards with some little alteration. The fowl-house seems awkwardly placed at the entry to the stable, and may be safer from harm to the poultry in a situation nearer to the cottages. One house is hardly sufficient, but that will depend on circumstances. The cart house and stables are well planned, and of a proper width; the stalls in the stables particularly so, as they can be converted into loose boxes at pleasure. The bed room over is very proper for single servants, and the double cottage for married labourers.

The accommodation for farm servants is yet far behind the improvements lately introduced into other departments in farm buildings; and the cottages in this plan too much resemble the execrable penfolds of Tweedside and Northumberland, where large families are huddled together into a space of about 16 feet square. The expence of raising the side walls to afford some chamber accommodation would not be great; and I do not know any thing connected with farm buildings that calls more loudly for amendment. But the ground plan is only shown here, and perhaps the cottage is raised.

This plan may be altered and enlarged to suit any locality; the barn may range next the rick-yard, and the dung courts may be multiplied and contracted. Where thrashing by machinery is yet excluded, it is the best plan I have yet seen; and is much to be recommended to the notice of landowners and farmers who may be erecting or altering their farm buildings.

I read in last magazine, an account of the mode of raising turnips followed in the north of Scotland by Sir F. Mackenzie, a gentleman of note in the agricultural world. The preparation of lands in autumn for the green crops of the ensuing year, must suppose a dry soil and an early climate, and also a freedom from the annual and other weeds that infest our best turnip lands. The lands mentioned possess the last requisite from their moorish nature; otherwise, a proper tilth would scarcely be attainable in that northern latitude. In all cases where the soil and climate, and the state of the land will admit, even a partial working of the land in autumn will very much further the spring operations, and cabbages may be planted in that season; and for beet-root and rutabaga it must prove very beneficial. If the dung cannot be applied, a ready state of the land and one fresh tilth may be available.

Sir F. Mackenzie applies both putrescent and artificial manures, which few farmers will find convenient. The circumstance of females carrying a manure in aprons and depositing it on the land, and sowing and covering the turnip seed, looks very like a "retrogression" in the machinery of field operations, not to have been expected from a Scotch amateur; and reminds us of Ireland and the continent, where women carry out manures on their back, and perform other works of animals. No great stretch of ingenuity would be required to make the machine that inserts the dibble holes deposit both the artificial manure and the turnip seed at the proper intervals, which would look like science applied to utility. I admire animal power and machinery doing the work of human beings, and more still, to see inanimate agents supersede the animate; and thus reduce human labour, and employ it to direct instead of performing. The above mode must be slow, or employ an overwhelming force.

A paragraph has been going the round of our newspapers and periodicals, containing an account of experiments in growing wheat, by some French agriculturists near Brest.

The seed was sown on an untilled surface, and pressed into the ground and covered with straw one inch thick; and some seeds were placed on a pane of glass, and also covered with straw. The crops were very productive, yielding a very tall growth, and containing fifty to eighty grains on an ear. The straw would afford protection against both cold and drought, and also nutritious matters by its decomposition. From these results, an inference has been drawn, that the earth is only a secondary means of vegetation; and that the chief support is drawn from the atmosphere—a supposition long entertained by several physiologists, and strengthened by daily observation. It also bears on the opinion, that all manures should be applied on the surface, which I believe to be the fact, from my own practice and experience. Manures covered in the land, produce a great exuberance of roots and fibres; whereas all sound and productive plants have the roots short, hard, and crisp, like the claws of birds.

The present mode of raising crops is a most laborious and expensive process; and it is reasonable to suppose that some shorter roads will soon be discovered. But the obtaining of one crop by an easier mode, does not constitute a system; the bearings on future crops must be taken into account, and also the state of the land. In the present case, the quantity of straw must be looked at, and the change that would happen from using it as a manure unprepared, instead of affording food and litter for animals.

The hint is valuable, though the great, and in many cases insuperable, difficulty lies in reducing a single instance to general and extensive practice. J. D.

MODERN IMPROVEMENTS IN GALLOWAY.

(FROM THE "HISTORY OF GALLOWAY," A VERY INTERESTING WORK JUST PUBLISHED BY MR. NICHOLSON, KIRKCUDBRIGHT.)

The improvements lately made in the agricultural system of Galloway appear chiefly to consist in a better management of drill husbandry, particularly with respect to turnips; a more strict adherence to alternate crops; more scientific modes of manuring, fencing, and draining; and the more general use of better implements. These changes in the practice of husbandry have rendered the soil so much more productive, that it is said to yield about twice as much food as it did at a distance of time not exceeding sixty years.

Potato crops, indeed, for a considerable period had been tolerably attended to; but the cultivation of turnips had been either neglected or wretchedly managed. For some time past, however, every successive season has displayed an increased extent of this valuable root; while in many instances the excellency of the crop is the best proof of its proper treatment.

For promoting the growth of this crop, bone-dust has been resorted to with wonderful success.[*] The feeding of sheep upon turnips is now become general; and the practice is profitable, for its effects are perceptible both in the quantity and quality of the grain afterwards raised upon the land. In the management of black cattle, the farmers of Galloway certainly excel. Their breed, in many respects, is not inferior to any in the island.[†] There is in the pastures of even inferior land here a nourishing kindliness not possessed by the richer grain soils of the eastern parts of Scotland; and to this quality, with the general mildness of the climate, may probably be attributed the superiority of the beef of Galloway cattle. Whether the breed of *Galloways* has improved of late, or not, is a question we are not competent to decide; but that the purest and best specimens are to be found in the Stewartry, is generally allowed.

The fattening of cattle by house-feeding has not yet become general, but it is rapidly gaining ground, and is practised with a success not surpassed in any other quarter of the kingdom. The specimens which have been produced at the Highland Society's Cattle Shows were always of so fine a description as to attract universal admiration.

The farmers, however, seem generally disposed to prefer consuming their turnips by sheep upon the ground, rather than by oxen in the house. Considering the general state of the soil, there is, perhaps, wisdom in the practice; for until the land be enriched to a certain extent, the removal of even a portion of the crop of turnips is followed by detrimental consequences, leaving the ground little ameliorated.[*]

Of late the farmers of the district have found great facility in obtaining markets for their fat stock. Steam vessels ply regularly between the ports of Galloway and Liverpool; and there is also a constant communication maintained between Galloway and both Ireland and Glasgow. The beneficial effects of these arrangements are powerfully felt by the agricultural and mercantile interests of the south of Scotland. Goods can sometimes be conveyed from Manchester to nearly the centre of Galloway in a day; and travellers, on some occasions, leave London after breakfast on one day, and breakfast the next in Kirkcudbright. It is to be hoped that a railroad touching on Dumfries, or passing through the district, may yet be formed, and prove the source of more extended intercourse.

During the period mentioned in this chapter, the trade of Galloway has amazingly increased. Formerly, every article required by the inhabitants, except goods of the most ordinary description, was sent for from some of the large towns at a considerable distance; but now the towns of the district afford all the necessaries, and many of the elegancies of life.

The facilities for the advancement of trade have kept pace with its progress. Harbours have been improved, light-houses erected, and beacons or buoys placed in suitable situations for the safety of navigation.

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[*] "Bones, which have now become a very important manure, are composed of earthy salts, chiefly phosphate of lime, with a little carbonate of lime, phosphate of magnesia, and about one-half of decomposable animal matter. Those of fat young animals are allowed to be the best. They are less beneficial for clay lands than for light soils, and less efficacious in wet than in dry seasons. In the improved districts of Scotland, bone-dust is coming into very general use as a manure for turnips, and mills for crushing bones are general in many parts of the country. There has been no improvement in Scottish agriculture so universally adopted as that of applying bone-dust to land intended for the production of turnips; and it seems better qualified than any manure hitherto tried for bringing waste land into cultivation. It is light, and can be carted to a great distance at little expense, one waggon-load of 100 bushels being found nearly equal to 40 cart-loads of farm-yard manure. It is asserted by some that its efficacy remains during the whole rotation, and even after it. On pastoral farms it will be found exceedingly useful; as, raising a better crop of turnips, it will greatly improve the condition of the stock."—From "A Treatise on Agriculture and Dairy Husbandry, by J. Jackson, Penicuik."

[†] "A true Galloway bullock:—He is straight and broad in the back, and nearly level from the head to the rump, closely compacted between the shoulder and ribs, and also betwixt the ribs and the loins—broad at the loins, not however with hooked bones or projecting knobs; so that, when viewed above, the whole body appears beautifully rounded, like the longitudinal section of a roller. He is long in the quarters, but not broad in the twist. He is deep in the chest, short in the leg, and moderately fine in the bone—clean in the chop and in the neck. His head is of a moderate size, with large rough ears, and full, but not prominent eyes, or heavy eye-brows, so that he has a calm, though determined look. His well-proportioned form is clothed with a loose and mellow skin, adorned with long soft glossy hair."—SMITH.

[*] For some of the preceding information we own our obligation to Mr. Macellan, lately farmer in Glentoo, now agricultural overseer to the Duke of Leinster, Ireland.

Since the rebellion of 1745, the people of Galloway have made very considerable progress in the path of knowledge and intelligence. Education has become generally diffused, it being a rare thing to find a native adult who cannot both read and write. The children of the poor are encouraged to attend schools, sometimes free of expense; and thus the mind is laid open to correct moral and religious impressions. The extensive circulation of *Chambers' Edinburgh Journal*, and other cheap periodical publications, has, at the same time, had a powerful influence in removing prejudices, and enlightening the minds of the people,

Twenty-six years ago, there was only one printing press in Galloway. At present there are no fewer than eight generally in operation. One newspaper is printed at Stranraer, namely, the *Galloway Register*. This paper frequently contains very interesting matter; it first appeared as a literary publication.

By the general improvements of the district, the health of the inhabitants has been considerably enhanced.

The draining of marshes and mosses, the erection of more spacious and better ventilated houses, the more comfortable clothing and nutritious diet now used, and the greater attention to cleanliness, have banished several diseases, such as the ague, which formerly prevailed to a painful degree. It is true, the ultimate boundary of human life has not been extended; but its average duration has been materially augmented. From this state of things the population of Galloway is yearly increasing, notwithstanding the constant, and by no means inconsiderable, stream of emigration, caused by the removal of its youth to more extended fields of enterprise. Many of these spirited and enlightened Gallovidians reflect much credit on their native district; whilst some of them return to enrich the places of their birth, by the ample fruits of their successful exertions.

LITERATURE.

A Few Words on the Corn-Laws, &c.; by Lieutenant-General Sir James Charles Dalbiac, K.C.H. London. John Ollivier, 1841.

It is truly refreshing, amidst the dimness and delusion with which this *questio vexata* has been obscured, and the tortuous mazes into which the economists delight to lead us in our search for light and a plain path, to have found such a guide as Sir Charles proves in his pamphlet. We have seldom read anything so well calculated, alike from its philanthropic spirit and straightforward plain dealing, to produce a right impression upon the class to which it is professedly addressed, or better adapted to direct "the reflecting portion of her Majesty's people," to a juster view of a question upon which in a great measure will depend, not only "a due supply of their daily bread," but upon the right adjustment of which is perilled the welfare and stability of this great empire.

With so momentous a matter it is eminently the duty of every one to make himself acquainted; but as being primarily concerned, none have so immediate an interest as those to whom this pamphlet is especially addressed, viz., "those who earn their bread by the sweat of their brow, whether manufacturing operatives, agricultural labourers, mechanics, or handicraftsmen;" and therefore it is our wish that it had been published in a more accessible shape to their means, convinced, as we are, that it is eminently calculated to dispel much delusion in those minds who will take the trouble deliberately to consider the matter.

When calmly examined the corn question is in itself not so intricate as many would have us to suppose, or as the careless and inconsiderate are, in their indifference, apt to think. It is its numerous ramifications or bearings upon other matters that stagger the mind from entering upon the consideration of this tortured question, more than any difficulty which will be found to attend the discussion, and adjustment of its different divisions separately. These, when taken *seriatim* will be found readily to yield to the application of figures, and of such statistical information as falls within our reach. Sir Charles Dalbiac has well said in the outset of this pamphlet, "In the discussion of subjects like those relating to corn-laws, there is no reasoning so conclusive as the reasoning of figures; and a little practical illustration, adapted to the capacity of all readers, will yield more ready conviction than any speculative theories of political economists."—(p. 2.)

Accordingly Sir Charles has throughout dealt with his subject after this fashion; and though he has discussed the question in reference to its bearings upon British agriculture, trade, banking, and finance, he has in all, exhibited so much clearness, and displayed so thorough an acquaintance with his subject, and so much common sense, that that understanding which refuses to be satisfied with such plain dealing must be so thoroughly warped by prejudice, or blinded by personal interest, as to be incapable of conviction by any application of facts or array of figures however conclusive.

We should have liked that the arrangements of our publication would have afforded opportunity for an analysis of the work, and allowed space for such quotations as would have given some idea of the amiable temper in which it is conceived, and the terse and convincing manner in which the argument is handled—a spirit and tact alike honourable to the heart, and creditable to the well-known talent of the gallant author; but we must content ourselves with one or two general remarks in reference to those passages bearing more immediately upon our home agriculture, referring our readers to the pamphlet itself, as not only well worthy of perusal, but as possessing more general interest than usually characterises those publications devoted to the treatment of such subjects.

Sir Charles in proceeding to show that the proposed fixed duty of the late Ministry would afford no adequate protection to British agriculture, thus exposes the *dishonesty* of the advocates for this change, who while they would be held as giving cheap bread to the consumer, endeavour to cajole the grower into the belief that he is henceforth to be better protected against foreign competitors, and consequently better paid for his grain.

"Nothing can be more suicidal than the argument here introduced by Mr. M'Culloch; it goes at once to destroy the avowed objects of his own pamphlet. He professedly pleads the cause of the manufacturer: he advocates the government proposition of a fixed duty; yet he would have it supposed, that the advantage was to be *all* on the *side of the agriculturist*: but as the agriculturist had never demanded the boon of '*higher pecuniary protection*,' what pity! not to have left well alone! since common reason tells us, that if the ministerial proposition be for the benefit of the farmer, it must of a certainty be to the disadvantage of the manufacturer. It becomes our duty, however, to shew that a more subtile or more fallacious argument than Mr. M'Culloch's could not well be devised. It is drawing a comparison as to *price* without any reference to quantity, without the semblance of a parallel as to circumstances: the average low rate of duty paid on foreign wheat imported within the period named, took place whilst protection was afforded to the home grower against any overwhelming importation of foreign corn; whereas the proposed fixed duty of 8s. is to be attended by a withdrawal of *all* protection as to quantity imported, and by the admission of foreign corn into the country, to any extent that may suit the views of the speculator: according to this principle of argument employed by Mr. M'Culloch, he might have gone a great deal farther; he might have contended, because the annual amount of duty to be raised under the ministerial project would exceed, in the proportion of 3½ to 1, the annual amount of duty received under the existing law up to 5th January, 1840, (which we shall presently demonstrate) that the protection given to the British farmer would be 3½ times greater than before; but the true effect of the ministerial project would be precisely the reverse; for in proportion to the *increase* of duty received, would be the *decrease* of protection afforded to the agriculturist. Yet Mr. M'Culloch is facetious enough to say, 'if the agriculturists be not satisfied with an arrangement of this sort, it is difficult to divine what would satisfy them.'"

The hypocritical statement which is thus exposed, it will be recollected, is founded upon the fact, that the 8s. duty proposed actually exceeds the average amount paid under the present law. But as well might it be argued that, because by far the greater proportion of grain brought into consumption under the present law, paid only 1s. duty, that therefore this showed what was the proper criterion of protection sufficient to preserve our home agricultural energies. It is not, however, the amount of duty actually *paid* under the existing law, that forms the element of calculation in reference to the settlement of this question, but the *amount of protection* afforded by that law. Because the duty *paid* for one week in the year has been 1s. per quarter, and on another it may be 6s. 8d., while the amount exigible in all the other statutory periods of taking the averages has been respectively 13s. 8d., 20s. 8d., and 25s. 8d., or upwards of twice this last sum as we have seen it,—it is surely not meant to be argued that the whole amount of protection afforded to agriculture throughout the year is only 3s. 10d., the average duty *paid* in those two weeks when the averages showed the highest figures, and when alone it suited the ends of speculators to withdraw their stocks from bond? It is thus the *duties exigible* at each period, and not the amount *actually paid* in any one year, which go to form the real protection against foreign competition. Now the average duty exigible under the present law for the ten years ending January 1840, will be found to be nearly 30s. per quarter, a pecuniary protection very different, indeed, from "2s. 3d. less than the proposed 8s. duty," of the late ministry!

The no less false statement and jesuitical argument,—"that with a duty of 8s. per quarter, foreign wheat cannot be sold in England under 56s., which is only 11¼d. less than the average price of wheat during the ten years ending in 1840," is thus ably exposed in Sir Charles's terse and characteristic manner:—

"This argument, which Mr. M'Culloch employs in his postscript, is not quite reconcileable with the postulate, which he lays down in his text, viz., that the existing regulations *have enhanced* the *price of corn very considerably*; to which we shall have occasion to refer in another place. The difference of 11¼d. is far too insignificant to merit consideration. For as 120 four-pound loaves can readily be manufactured out of a quarter of wheat, the reduction in the cost of a four-pound loaf by the saving of 11¼d. in a quarter of wheat, would be a fraction less than the *tenth part of a penny*. But if this be true, that no greater saving than 11¼d. be contemplated, in the price of a quarter of wheat, where lies the virtue of the declaration so often pronounced in the House of Commons, with reference to the corn-laws, 'that the time had arrived when protection to the interests of particular classes was no longer to be afforded?' Whence has arisen the controversy in which Mr. M'Culloch himself has so largely engaged, and which now convulses the United Kingdom from one extremity to the other? If it be *really* the case, that by the enactment of the ministerial project the operative and the mechanic would only save *one-tenth part of a penny* in the purchase of four pounds of bread, in the name of 'peace and of good will towards men,' what means the outcry which has been set up of 'CHEAP BREAD?' the asserted panaçea of all manufacturing distress, the adopted watch-word for each contested election? There is no doubt that the recent dissolution of parliament turned mainly upon the question of the corn-laws. Yet Mr. M'Culloch would have us suppose that the representatives of the people had been sent to solicit anew the suffrages of their constituents, for the mere saving of *eleven pence and one farthing* in the cost of a quarter of wheat. The comedy of 'Much ado about nothing,' is a farce to this."

He then proceeds to point out Mr. M'Culloch's error as to the *minimum* price at which foreign wheat could be imported into this country, and though he clearly shows that Mr. M'Culloch's statement on this subject is far above the truth, yet we think Sir Charles has been led to take too favourable a view of the matter as respects the effect upon price, to which a fixed duty of 8s. would lead. To show with full force the ruinous effects upon our native agriculture, to which a fixed duty to any moderate extent would be productive, we have only to suppose a full crop at home. This which was wont to be considered the object of the farmer's most ardent aspirations, and the just reward of his toils, would then prove his greatest calamity. In adverse years, or in seasons of moderate productiveness, he might well consent to the free admission of foreign corn, on payment of 8s. duty. But let his prices be run down under 40s. per quarter for wheat, as they were in 1835, by means of productive seasons, and then we should have agricultural distress in right earnest, and be subject to a competition, which would bring ruin alike upon the labourer and the farmer. Plenty of bread indeed, but little work and small wages. It is absurd, and contrary altogether to fact, for Mr. M'Culloch, or any other advocate for the agitation scheme, to contend that foreign wheat cannot be sold here under 56s. per quarter. The Consuls' returns of the price of wheat abroad, since the war, shew that at Dantzic and Hamburgh, these prices have been frequently little more than 20s. per quarter. We happen to know that in 1837, pressing orders were sent to this country to sell fine foreign wheat at 16s. per quarter—add 8s. duty to this sum, or even twice 8s., and say could the agriculturists of this country compete with such a price as the addition of these figures produces? For it is totally false, and altogether delusive, to talk of the farther protection afforded by the amount of freights from abroad. The freight from Dantzig has of late not been more than 3s. to 3s. 6d. per quarter, an amount considerably less than it costs the farmer here, to transport his wheat to the principal markets of consumption. Putting inland carriage out of view, in point of fact, the expense of transit along our own coast nearly equals the amount of the charges from Dantzic, and in many instances amounts to more than the freight from Hamburgh. The freight from Lynn or Yarmouth to London, is generally 2s. to 2s. 6d., while as we have seen that from Dantzic is 3s. to 3s. 6d., the insurance is nearly the same, and the other charges all equal, so that the actual difference—the whole amount of protection, on this head, upon wheat from our own coast, which has previously been subjected to inland carriage—is only 1s. to 1s. 6d. per quarter, when brought from the distant ports of the Baltic, and *actually less than nothing* when brought from the many foreign markets nearer home. Under such circumstances, with rent and labour so much below what can be produced here, is there no chance of agricultural capital being carried abroad? Is it so altogether chimerical that our boasted beautiful fields may relapse into barrenness?

We wish some of our agricultural friends who affect to argue that they have nothing to fear from a free competition with foreigners, would take the trouble to put together the expense of growing in this country an acre of wheat; and recollecting that the farmers' profit is the sum remaining over, after paying rent and charges, let us see how the balance stands, assuming the data we have furnished below* (and there is no denying its accuracy) formed the criterion of price in years of abundance. The average produce per acre of wheat in all England, given by Mr. M'Culloch, is 21 bushels per acre. Would *they* be contented with 36 bushels? And yet this would scarcely yield 8*l.* per acre, at the price foreign competition would permit them to draw in abundant seasons. Now let them calculate the expense of growing this acre of wheat how they may, where is the profit? How is the rent to be paid? If they had the land for nothing, the expenses are more than equivalent to the value of the produce, even with all its supposed abundance.

This pamphlet readily exposes, and triumphantly refutes, another of the numerous fallacies with which the whigs attempted to deceive the agriculturists, respecting the effects of the foreign competition to which it was intended they should be exposed, viz.:—that it would stimulate to greater exertion, and induce a fuller supply of home produce. Alas! it would be the exertion—the expiring effort—of the lamb when inveigled into the grasp of the wolf! This statement was, it will be recollected, boldly set up in the face of the Chancellor of the Exchequer's scheme of deriving from the duties upon the importation of foreign corn, under the proposed law, upwards of one million and a half to prop his falling budget. Sir Charles, on this subject, says:—

> "In order then to raise the sum of 1,556,639*l.* by a duty of 8s. per quarter on foreign wheat we must enter annually to the amount of 3,891,597½ quarters. Our home consumption has been variously estimated —some persons have set it in years of scarcity at twelve or fourteen millions of quarters, others in favourable seasons at sixteen millions; to be on the safe side, we will take the higher estimate: thus the quantity of wheat required to be entered to make up the said amount of duty, will, in favourable seasons, be nearly equal to *one-fourth part of our home consumption*, whilst in bad seasons it will exceed one-fourth; and this amount of importation must necessarily displace *one-fourth of our present home growth*; for, observe, the importation is not to be graduated according to our wants or deficiencies, but the *full measure of foreign corn* must be annually poured in from abroad (whether the season be *good* or *bad*, whether we *want it or not*) in order to make up the duty to the sum of 1,556,639*l.* as an item of the public income. If we take the price of foreign wheat abroad, (as estimated by Mr. M'Culloch), at 35s. per quarter, and add but the half of his estimate for transit, (say 5s.) the cost of 3,891,597½ quarters at 40s. per quarter, would be 7,783,195*l.* But this is not the full extent of injury to be inflicted on the corn-grower at home. The prime cost, with freight, &c., of 3,801,597½ quarters of foreign wheat is set at no more than 40s. per quarter, but the value to the British agriculturist of the same quantity of home grown wheat when brought to market, must be estimated (at lowest) at 56s. a quarter. The loss, therefore, to the home agriculturists will be, not in the proportion of 7,783,195*l.*, but in the proportion of 10,896,473*l.*

Their ability to buy of the manufacturer would be to this amount then reduced, while the foreigner would be benefitted by our gold to the extent of 7,783,195*l.* annually, to be applied in fostering manufactures in his own country. Or even admitting that he expended a part of this large sum in supplying himself with those necessaries of our manufactures which his limited wants demanded, would these amount to one-tenth part of what our home agriculturists, receiving three times the wages, and clothed entirely in British goods—hats and shoes—would take off? It may be fairly stated that, in transferring the demand for agricultural produce to the foreigner to the extent of 10,000,000*l.*, the British manufacturer is exchanging a home customer to the amount of 4,000,000*l.* for a foreign purchaser to the extent of 400,000*l.*, admitting that he took from us all that he can possibly require. But it is well known that gold alone is exchanged for foreign corn, and the ruinous effect of an increasing drain of bullion upon the commerce of the country, of which the adoption of a low fixed duty upon foreign corn would be productive, is fully and ably pointed out in this pamphlet. To this part of the subject we would call the serious attention of our manufacturing friends, as also to the concise and clear manner in which Sir Charles grapples with the question whether the distress

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* Two years rent (fallow)	£3	0	0
Five ploughings	2	0	0
Harrowing, rolling, gathering, &c.	1	5	0
Manure, carting and spreading	3	15	0
Seed, 4s. per bushel, putting in, &c.	0	15	0
Harvesting, &c.	1	5	0
	£12	0	0

among our manufacturers is in reality attributable in any respect to the operation of the corn laws. In fact, they will find the whole well worthy of perusal; and our earnest wish is, that the pamphlet were got up in such a form as to be accessible to all the reflecting portion of Her Majesty's people, from whose minds, we are satisfied, it would dispel much delusion.

Sir Charles, in his anxiety to state the matter dispassionately, and evidently desirous in no instance to overdraw his statements, has failed sometimes to put his case so strong as it otherwise might have been placed; and we quote the following passage to point out a slight mistake which goes far to prevent the appeal so eloquently made at its close from having much of the force to which it is well entitled:—

> "It has been further urged in favour of a fixed duty, that we are not capable of growing a sufficiency of bread-corn for our own consumption. The apprehension is groundless. We maintain that with fair encouragement, and in favourable years, the amount of our home-growth of wheat will be more than adequate to the demand. During five consecutive years ending with 1836, the total quantity of foreign wheat entered for home consumption did not reach a million of quarters, being less than the supply for one week in each year. Aye, but, say the abolitionists, look at our rapidly-increasing population! We reply, look at the still more rapidly increasing enterprise of our British farmers. To those who doubt the capabilities of this country to grow a sufficiency of bread-corn for the people, we would say, Go, behold the gigantic strides with which agriculture is now advancing throughout the entire of that fertile district lying between the Tweed and the Firth of Forth, where it may almost be said that two stalks of corn are now made to grow where only one stalk grew of late. Go, contemplate the sums, nay the *fortunes*, which an enterprising tenantry have been devoting to the culture of their lands, in the full assurance that under legislative protection, they should be permitted to reap the fruit of their exertions. Proceed southward, and see how the examples set by their northern brethren are now being followed, and similar improvements now being carried on by the tenantry in Northumberland, Durham, Yorkshire, and other more southern counties, and we shall no longer be told of the inability of this country to supply her people with bread."

Now, so far from the quantity of foreign wheat brought into use during the five years mentioned being *nearly* a million qrs. (which is the inference), we find it stated by Mr. Tooke at the close of his review of the prices of agricultural produce during the period between 1831 and 1837 (History of Prices, &c., vol. II., p. 263). "The fact is, therefore, in full evidence, that during six successive years (from 1831 to 1837), the produce of the United Kingdom has sufficed for the consumption, greatly increased as that has been." And in point of fact, it will be found on reference to the returns of *all kinds of grain and flour* entered for home consumption, during the whole period of ten years first following the introduction of the present law, that the annual average is very little more than a million of qrs. (1,135,000), notwithstanding the many untoward seasons which distinguished this period.

It is of immense importance to keep these facts accurately in view, as showing the capabilities of our own soil fully to support the population; and it is impossible for any one at all acquainted with the state of agriculture in this country—the extensive breadths of land that continue not half cultivated—to doubt that the resources of the soil of Great Britain alone, if amply developed, are fully sufficient to maintain in abundance a vastly increased population. And yet, because we have imported, during the present century, in bad seasons, what amounts to an annual average of less than one million quarters of all kinds of grain—*less than the 60th part of what is actually yearly produced at home*, we are to be told that the British soil cannot be brought to support its population! Do these men know that one bushel additional produce from the soil of these realms already annually under grain would amount to twice as much as the amount of our annual average importation? And when it is known that the effects of the recently introduced improvements in agriculture which are now so rapidly being extended, have been in all cases materially to increase, and in some instances to more than double productiveness, can any reasonable man doubt—knowing the extent of land that remains yet to be improved—that a very short period must elapse ere this country becomes independent of all foreign supplies of human food, let the population increase as it may.

THE FARMER'S ENCYCLOPÆDIA, AND DICTIONARY OF RURAL AFFAIRS.

PART III.

BY C. W. JOHNSON, ESQ.

London: Longman, and Co.

The present number of this valuable work fully supports the general character everywhere expressed of it, and in our opinion no publication of the kind deserves it more amply. It not only constitutes a ready and authentic reference to the farmer, but on other subjects—as gardening, farriery, botany, and natural history—the author is equally conversant, and shews the labour and research he has bestowed in making his work generally useful.

The authorities he quotes are all of the first order, so that every dependence can be placed on the information conveyed. His own opinions are just and sound, and practice and science are very judiciously intermingled.

A great recommendation consists in avoiding the length and prolixity of the older encyclopædias, while all useful and necessary information is given in a neat and condensed form. The article on "cattle" is particularly neat; and, at the same time, contains a sufficient description of each variety. "The Argyleshire breed, or West Highlanders," says the author, "are bred to what the soil and the food will best support. The Highlander, however, must be reared for the grazier alone—every attention to increase his weight in order to make him capable of agricultural labour, every effort to qualify him for the dairy, will not only lessen his hardiness of constitution and propensity to fatten, but will fail in rendering him valuable for the purpose at which the farmer aims. The character of the Highlander must still be that he will pay better for his quantity of food than any other breed, and will fatten where any other breed will scarcely live."

The above quality of the Highland cattle is universally allowed, and the beef always commands a higher price. On other important subjects the author is equally concise and descriptive, and he cannot fail to render his work a standard one on the art, comprehensive agriculture.

EXPERIMENT ON THE GROWTH OF SWEDES.

BY HENRY C. COMPTON, M.P.

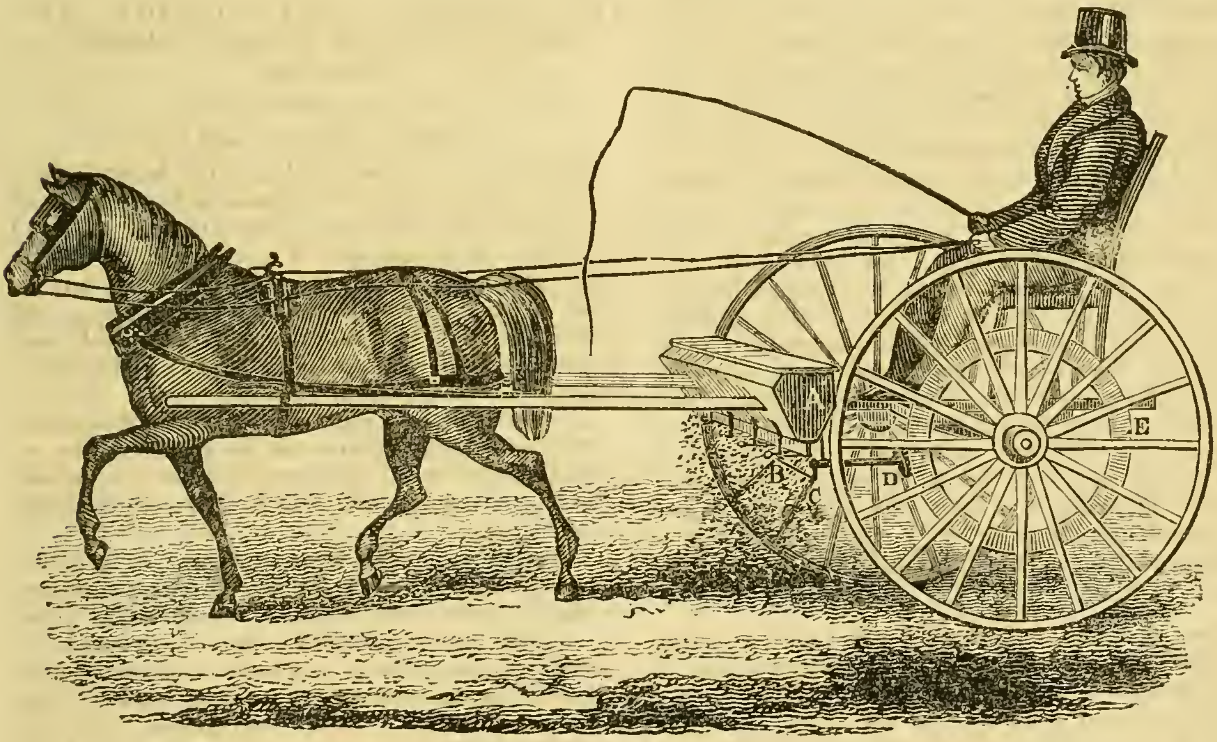
(From the Journal of the Royal Agricultural Society of England.)

Purple-top Swede, sown June 15, 1840. *Produce weighed March* 20, 1841. *Soil heavy, on a clay subsoil, land not drained.*

The field was ploughed in balk; one set of balks at 27 inches apart, and the other set at 36 inches apart, from the centre of one balk to the centre of the other. On the balk at 27 inches apart there was but one row of turnips sown, and on those at 36 inches two rows, each row being 12 inches apart, so as to allow of their being horse-hoed. A double-breasted plough was afterwards run down between all the balks to clear out the furrows and to earth up the turnips.

No.				cwt.	lbs.
1.	5 cart-loads of cow manure to ¼ of an acre, rows	27	inches, weight	79	0
2.	5 ,, horse ,, ,,	27	,,	80	0
3.	5 ,, cow ,, ,,	18	,,	87	73
4.	5 ,, horse ,, ,,	18	,,	108	1
5.	5 bushels of half-inch bones ,,	27	,,	73	82
6.	5 ,, ,, ,, ,,	18	,,	89	12
7.	6½ ,, Poitteven's manure ,,	27	,,	74	26
8.	6½ ,, ,,	18	,,	82	0
9.	5 ,, with soot and ash.	18	,,	90	0
10.	Bone refuse, with soot and ashes, cost 16s.	18	,,	80	0
11.	Grass and weeds, 5 cart-loads, put in green	18	,,	64	0

Manor House, April 26, 1841.



HATCH'S SOWING MACHINE.

The engraving and description of this machine is taken from an American publication—the "*New Gennessee Farmer.*" We give it insertion, not only for the purpose of exhibiting it to our readers as a specimen of American agricultural implements, but also to afford an opportunity to our own manufacturers of availing themselves of any points of value, if any there be, in the implement in question.—Ed. F. Mag.

We are happy in being able at length to give our readers a correct representation and description of Hatch's Sowing Machine—an invention which we firmly believe will prove of more benefit to the farming community than any other that has appeared of late years. The above drawing is so perfect, that but little description is necessary. The machine consists of a pair of wheels of the size of ordinary carriage wheels; an axletree ten feet long, with a pair of shafts for the horse to draw by. Just in front of the wheels, and across the shafts, is the hopper *(A)*, ten feet long, and capable of holding three or four bushels of grain. At the bottom of the hopper is a slide or agitator one inch square, faced with iron, and having teeth on the inside, by the motion of which the grain is shaken out. The width of the crevice, and the consequent discharge of the seed, can be increased or diminished by means of set screws, as shown at *B.* When the machine is in operation, a rapid vibratory motion is given to the agitator by means of a small rod and crank (*C*) attached to one end of a small shaft fifteen inches long; on the other end of which is a pinion wheel (*D*), with cogs or teeth meshing into the master wheel *E*. The master wheel is bolted on to the inside of the spokes of the nigh wheel of the machine. It is two feet in diameter, and one revolution of it gives eight revolutions to the pinion wheel and shaft. On the top of the back part of the machine is a seat for the driver. A small cord is attached to the end of the pinion shaft, and reaches to the seat of the driver, by means of which he can readily put the machine out of gear, so as to stop the discharge of seed at any time when desired. The machine will sow all kinds of grain, grass seed, and plaster, at any desired rate from four quarts to as many bushels per acre. It is easily managed, and not liable to get out of order. A man or a smart boy, with a horse, can sow from twenty to twenty-five acres with it in a day.

The inventor and proprietor of this machine has spent several years in testing and improving it, and he now introduces it to the public with the utmost assurance that it will fully meet the wants and expectations of the community. It is well known that *sowing* is one of the most difficult and laborious operations of the farmer, and one which but few men can perform properly. Hence arises the need of a machine like this—one that will perform the work correctly, expeditiously, and with ease. All who have used this machine agree in declaring that it answers the purpose *exactly*; and if we are not mistaken, it will in a few years be as uncommon to see a farmer sowing grain by hand in this country, as it now is to see one thrashing with a flail.

Mr. Hatch has lately been engaged in manufacturing a few machines in this city, in order to introduce them to the farmers of western New York, but he cannot, nor does he wish to, supply all orders, as his main object is to sell rights for others to manufacture. The price of the machine is forty dollars. He is willing to send two or three to Ohio and other western States, if desired, in order to make them known there; and he hopes that all who feel an interest in the subject will examine them and satisfy themselves, before purchasing rights. To enterprising mechanics and others, he will sell county or state rights, on favourable terms. Letters addressed (post-paid) to Julius Hatch, Rochester, will receive attention.

Aware of the deception which is often practised by means of certificates and recommendations, and being determined that this machine shall recommend itself, the proprietor begs to refer those wishing information respecting it to the following highly respectable individuals who possess them:—

Rawson Harmon, Jr.,	Wheatland
Sylvester Harmon,	,,
Elisha Harmon,	,,
H. and D. Rogers,	,,
Isaac Cox,	,,
Thomas H. Newbold,	Caledonia.
Isaac Lacey,	Chili.
Marvin Smith,	Mendon.
John Moxon,	Greece.
Asa Rowe,	,,
Henry Fellows,	Penfield.
Alva S. Hoyt,	Batavia.
Chester Scott,	Elba.

ON LIEBIG'S ORGANIC CHEMISTRY.

(FROM THE QUARTERLY JOURNAL OF AGRICULTURE.)

In our last number we proceeded with some degree of minuteness into an examination of the former division of this work, wherein the learned author details his opinions regarding the condition in which plants receive the various chemical elements necessary for their subsistence. We shall now examine the more decidedly practical portion of the volume before us, which is divided into three sections, namely, The Art of Culture, the Interchange or Rotation of Crops, and Manure.

1. *The Art of Culture.*—This part contains a summary of all that has been already stated, and likewise a further endeavour to give his statements a practical bearing. As might be supposed from what we have already remarked concerning the practical portion of this work, there are several points in which we cannot agree with the author; but still there are many observations of undoubted value, and, consequently, as we have so freely given our opinion regarding what we consider the practical errors of this work in the former part of our review, we shall, without omitting to notice the questionable points, take great pleasure in descanting more fully on the truly valuable facts and suggestions which have proceeded from the pen of this learned man; and while we particularly wish our readers to remember that we by no means agree with the author in many of his practical deductions, still we must in justice confess that much of the work is of great value, and we confidently believe will, in the hands of more practical men, lead to the development of some of the most important truths regarding this very obscure question.

The first observation in this division of the work that requires notice, is one to which we regret to say we are obliged to refuse assent. Our author remarks at page 119:—

> "The common view which has been adopted respecting the *modus operandi* of humic acid, has given occasion to the following inexplicable phenomenon:—A very small quantity of humic acid dissolved in water gives it a yellow or brown colour. Hence it would be supposed that a soil would be more fruitful in proportion as it was capable of giving this colour to water—that is, of yielding it humic acid. But it is very remarkable that plants do not thrive in such a soil, and that all manure must have lost this property before it can exercise a favourable influence upon their vegetation. Water from barren peat-soils and marshy meadows, upon which few plants flourish, contains much of this humic acid; but all agriculturists and gardeners agree that the most suitable and best manure for plants is that which has completely lost the property of giving a colour to water."

Upon this statement we beg to offer the following remarks:—1st, That the phenomenon in question is by no means inexplicable—nay, were it otherwise, our theory of the nutrition of plants would of necessity fall to the ground. We have already observed, towards the close of the former part of this review, that the compound to which there is reason to believe soil in a great measure owes its fertility, possesses the valuable property of being decomposed, or rather rendered for the time soluble, by an excess of water. (M. Liebig is aware of the fact that heavy rains do no direct injury to the fertility of the soil, but he explains it in a totally different manner.) If this be true, it follows that when the water upon a soil is coloured, it is so from the presence of some other organic substance; for, be it remembered, M. Liebig himself confesses that there are an infinite variety of brown organic solutions, to the whole of which the term of humic acid has been applied. This leads us to observe, in the second place, that the chemical characters given to the brown solution by M. Liebig, proves at once that he is not referring to the compound to which we ascribe the fertility of soil: for he says at page 120—"The brown solutions containing this substance are decolorized in the air, by absorbing oxygen, and a black coally matter precipitates the substance named *coal of humus*." Now we have frequently exposed the solution of humus in ammonia to the air for months together, without the slightest precipitation; nay, more, we have exposed it to the direct action of oxygen gas for upwards of a fortnight, without the slightest change taking place either in the solution or the gas; and likewise, although this solution, like that of Liebig's humic acid, is decomposed by a temperature of 32° F., the water freezing pure, and the organic matter separating in distinct flocculi, still the whole redissolves upon an increase of temperature. The reason, therefore, why the fact appears to our author to be inexplicable, depends entirely upon his having failed to distinguish the brown water of peat-bogs from the organic solutions believed to be present in fertile soils. In the third place, the observations regarding manure are quite opposed to all we have heard expressed upon the subject, either by farmers or others. Why all the talk of not over-rotting manure? Why the numerous lengthy descriptions of the extreme value of collecting and saving the brown liquor which flows from our dunghills? Is it not because it is the most valuable part of the manure? Does not experience tell us that liquid manures are much the most powerful—nay, if not used cautiously, do harm by producing too rank herbage? and yet we are distinctly told that "all agriculturists and gardeners agree that the most suitable and best manure for plants is that which has completely lost the property of giving a colour to water." If this be true, it is indeed to us an "*inexplicable phenomenon.*" Nay, if we read carefully M. Liebig's own observations on the use of manure, we shall perceive that he directly contradicts this statement, by shewing that the liquid portions always contain the very substances upon which, he acknowledges, their chief value depends; and, consequently, were the above statement correct, it would involve the strange contradiction of supposing that manure is best fitted for plants when it no longer contains the substances which are most useful for promoting vegetation.

After commenting a little upon the value of atmospheric air in the soil, our author proceeds to make some most valuable observations, in which, although we differ as to the cause, we so entirely agree as to the effect, that we shall willingly comment upon the facts deduced, without interfering with theoretical views. He observes, page 120, "Humus, supplies young plants with nourishment by the roots, until the leaves are sufficiently matured to act as external organs of nutrition; its quantity heightens the fertility of a soil by yielding more nourishment in this first period of growth, and consequently by increasing the number of organs of atmospheric nutrition." This is a fact of the greatest practical importance, because it demonstrates to us that the success of the crop depends greatly upon the state of the soil *when the seed is sown.* It is no doubt true that the operations for increasing the fertility of the soil so almost universally require the absence of vegetation during their performance, that they must be completed before the seed is sown; but still there are some which may be performed at any time, as, for instance, the application of liquid manure, and top-dressing the permanent grass; and, in reference to these, we may learn from the above valuable observations that, to ensure success, they should be had recourse to early in the year, just when the plants are beginning to spring, so as to yield more nourishment in "*the first period of growth.*" We have here another instance of the close analogy subsisting between the animal and the vegetable kingdoms; for we are all well acquainted with the fact, that upon the care and good feeding bestowed on stock during their early life depends in a great measure their subsequent value and thriving condition. An ill-fed calf seldom makes a good cow. I may here observe that one of the most valuable portions of the work before us is undoubtedly that which calls the agriculturist's attention to the air as yielding so much of the necessary nourishment to his crops. No doubt the author has carried his statements of its importance much too far, but still the subject had been greatly overlooked in the generality of the works on scientific agriculture. We think that it would be by no means difficult to prove that whereas some plants receive about three-fourths of their carbon from the soil, many others do not receive above one-half, and some, especially certain forest trees, not more than one-third. We beg, however, particularly to call attention to the fact, that, although so much of the weight of each crop is supplied by the atmosphere, still *the whole success of the crop depends upon the three-fourths, one-half, or one-third, as the case may be, which is supplied by the soil.* So that, although it is of importance to bear in mind the value of the atmospheric supply of carbon, yet it can have *no effect whatever on the farmer's practice,* because all his endeavours are called into requisition to enable the plants to obtain the proper quantity of carbon from the air, by preparing for them the relative quantity of carbon obtained from the soil. This is a fact that we wish the readers of M. Liebig's work to bear continually in mind, because we feel confident that a want of due attention to this is the chief cause of the mistaken views which he has promulgated. It is from the *soil* that the plant receives its *first nourishment*—it matters not in what particular condition it may be—and upon the *first nourishment* depends all the future success of the crop. Now, the farmer's duty obviously is to assist in the preparation of this first nourishment; and this, in fact, is all that he has ever done; nay, more, we greatly suspect it is all he ever will be able to do.

M. Liebig proceeds to point out the classes of plants which are most independent of the soil; these are "plants which receive their first nourishment from the substance of their seeds, as bulbous plants;" "these could dispense entirely with humus." The truth of the former portion of this statement must have been verified in the experience of every reader of the Journal. What, for example, is more common than to see the most luxuriant hyacinths growing in pure water? The latter clause of the sentence we are somewhat inclined to doubt, at least, if it refers to the whole period of the growth of the plant; for we very much doubt if good seed could ever be obtained even from bulbous plants, unless they were grown in soil containing a good supply of humus. Our author next explains, in a beautiful manner, the reason why too rich a soil produces rank unprofitable vegetation—it is because, in this instance, there is too much food yielded by the soil, and hence the atmosphere is incapable of supplying its share in due time, and the result is an imperfect development of the most important portions of the plant, viz., the blossom and fruit. It thus appears evident that the skill of the farmer shows itself in his discovering the point to which he ought to enrich his soil, so as to obtain the most abundant crops, without, on the one hand, letting the atmospheric supply be lost for want of energy in the plants themselves; or, on the other, pushing his plants forward with undue rapidity so as to make a greater demand upon the air than it is capable of supplying. This is the true art of farming, and in this it is that we look to chemistry for direction. We think that the above observation of M. Liebig may be useful in explaining the utility of a green crop taking the first place in a rotation. These crops, particularly the turnip, are cultivated for a part which is fully developed prior to the formation of blossom or fruit; it follows, therefore, that we may, in this instance, supply the plant even with an undue quantity of manure without injury to that portion which it is our object to obtain; nay, on the contrary, we shall increase that portion, even though by so doing we may diminish its tendency to produce seed. This is effected by the newly-supplied manure, which must of course contain more active matter during the first year than after it has for so long a period been placed in circumstances where its more energetic constituents are capable of being carried away both by air and water. The well known fact of many of the turnips on poor soil running to seed before the bulb is fit for use, is, in our opinion, a strong practical proof of the plausibility at least, if not the truth, of this suggestion.

Our author next draws attention to a fact of equal, or still greater, practical importance than the one just discussed. It is the following:—

> "A new and peculiar process of vegetation ensues in all perennial plants, such as shrubs, fruit and forest trees, after the complete maturity of their fruit." "The formation of the layers of wood progresses, the wood becomes harder and more solid, but after August the leaves form no more wood; all the carbonic acid which the plants now absorb is employed for the production of nutritive matter for the following year; instead of woody fibre, starch is formed, and is diffused through every part of the plant by the autumnal sap." "A very early winter, or sudden change of temperature, prevents the formation of this provision for the following year; the wood, as in the case of the vine-stock for example, does not ripen, and its growth is in the next year very limited."

How important must the knowledge of this fact be to the successful management of forests and orchards! Because it follows, that, if the woody fibre ceases to increase after August, and subsequent to this period starch is deposited "through every part of the plant," this must make a considerable difference in the value of the wood. For it must be borne in mind, in connection with this fact, that the various ingredients of a plant are acted upon with very different degrees of facility by external chemical agents; thus, for instance, starch is much more easily affected than woody fibre. We are not prepared to answer positively regarding the application of the above fact to the felling of timber, as we are not aware of any experiments having been made upon the subject; but from the known properties of starch and woody fibre, we should be inclined to think that wood felled in August, if once properly seasoned, would be more lasting than wood felled in winter or spring, when the whole plant was permeated by starch, or when the starch had begun to be converted into sugar and gum, which is the case in spring. We are inclined to think it very probable that well directed experiments, founded upon a knowledge of this fact, would, in all probability, lead to very valuable results. Has any one yet attempted to prove what influence the quantity of starch, gum, or sugar in wood has upon the production or increase of dry-rot? Who can tell but the period of felling may have much more influence in checking this great evil than any of the far-famed steeps devised by Kyan, Burnett, and others, who have laboured to *cure* a fault which it is likely proper attention may be capable of *preventing?* Again, as it appears that the rapidity and extent of the growth of the following year depend upon the quantity of starch laid up in the tree for the purpose of supplying nourishment during the "*first period of growth*" in the early spring, how careful ought gardeners to be that their choice shrubs be not exposed to cold early in the autumn, but that the temperature in which they grow be carefully preserved sufficiently high to admit of the formation of a good quantity of starch! Connected with this fact is another of equal importance, more particularly to the farmer, which, although not directly mentioned in the work before us, is evidently well known to its author, and is indeed implied in several of his observations. It is an interesting circumstance, that, according to one of those wise provisions of Nature which are continually presented to the view of those who cultivate the natural sciences, plants are capable of propagating their species in various ways; and if prevented doing so in one, they at once make preparation for its accomplishment in another: for example, many plants with running stems produce little or no seed so long as they can push out their roots and stems in all directions, but if this be prevented by confining them to a small quantity of earth, then seed is produced in much larger quantity. Now, the method of propagation is closely connected with this deposition of nutritive matter, because all seeds contain a deposit of this description; thus "annual plants form and collect their future nourishment in the same way as perennial; they store it in their seeds in the form of vegetable albumen, starch, and gum, which are used by the germs for the formation of their leaves and first radicle fibres." Let us apply this fact to the potato, as a very familiar instance of a valuable plant which propagates in two distinct manners, viz. by seed and by its tubers. If there is any truth at all in the above assertion, there must be some proportion between the size of the plant and the quantity of nourishment which it lays by for future individuals of its species, because this nourishment is eliminated by the leaves; and therefore *cæteris paribus*, as the number of leaves so will the quantity of nourishment be, and as the one increases so will the other. In cultivating the potato, our object is to obtain the greatest possible amount of this nourishment in the tubers; if, therefore, we allow the seed to form, it follows that its production is at the expense of the tubers, for all that is given to the seed would otherwise be given to the tubers. How beautifully this point is proved practically by the following sentence, p. 125:—

> "Much attention has recently been drawn to the fact, that the *produce of potatoes may be much increased, by plucking off the blossoms from the plants producing them*, a result quite consistent with theory. This important observation has been completely confirmed by M. Zeller, the director of the agricultural society at Darmstadt. In the year 1839, two fields of the same size, lying side by side, and manured in the same manner, were planted with potatoes. When the plants had flowered, the blossoms were removed from those in one field, while those in the other field were left untouched. The former produced 47 bolls, the latter only 37."

The next observation of consequence regards the influence of the quantity of nitrogen applied to a plant in increasing or diminishing the production of its several parts or constituents.

> "Every fibre and every particle of wood is surrounded by a juice containing an azotised matter; and the starch granules and sugar are inclosed in cells formed of a substance containing nitrogen. Indeed, everywhere, in all the juices of the fruits and blossoms, we find a substance destitute of nitrogen, accompanied by one which contains that element."

As these are therefore so mutally dependent upon each other, whatever influences the one must have an equal effect upon the other; because an excess of either must be injurious. It follows, therefore, that one grand point to be gained in agricultural practice, is to suit the quantity of these elements in the manure to the wants of the particular crop for which it is intended, so that, when we wish to increase the production of an azotised matter, as the gluten of wheat, we may not be frustrated in our attempts by a want of a sufficiency of carbon in a condition capable of assimilation; or if we desire a substance destitute of nitrogen, as the starch of a potato, we may not check its formation by supplying too little azote to produce the cells in which the granules are enclosed.

We now come to examine our author's observations on that most important subject, "*the fertility of soils*." This part of the work is arranged much in the same manner as the former, namely, 1st, an inquiry into the effect produced by each ingredient of the soil separately; and, 2nd, a more general investigation of the mingled mass. Soil is produced by the crumbling of rocks, and the character of the rock is so far retained by the soil produced by its disintegration, that we are capable of deciding pretty accurately as to the value or possible fertility of a soil, if we know the kind of rock which has given rise to it.

In descanting upon the properties of alumina, our author takes occasion to mention the vast quantities of the alkalies, potass and soda, which occur associated with it in all the rocks in which it exists: from which he is led to infer that the chief value of this substance in soil, in addition to its absorbent power for water and ammonia, depends upon the presence of these alkalies. To give some idea of the quantities in which these substances are found in different soils associated with their alumina, we may state that, in an imperial acre of a soil of ten inches deep produced by the decomposition of fel-spar, there would be 927,360 lbs. of these alkalies; in a soil from clinkstone, from 161,000lbs. to 322,000lbs.; in one from clay-slate, from 80,500lbs. to 161,000lbs.; and in a soil from basalt, from 37,887lbs. to 56,875lbs. If these calculations are to be at all depended upon,—and, from the names of the analysts attached to them, we should think that they were in every way deserving of credit,—it would follow that most soils will contain as much alkalies naturally, as would supply the most abundant crops of grain with this ingredient for upwards of 500 years, supposing that not one particle were added to the soil during that long period.

From the author's observations in this place, we may likewise deduce the following important fact, namely, that the ordinary solvents occuring in soils, such as rain-water, &c., are incapable of dissolving the alkalies associated with its various mineral constituents, unless complete disintegration of the rock has previously taken place. And from this he infers, that one of the chief values of repeated ploughings and harrowings is to effect this more perfect disintegration, which is necessary in order that the alkalies in the soil may become available to the plant. The importance of these substances to vegetation is proved by the fact of all plants containing them abundantly in their ashes; and not only are they useful in this way, but they likewise act an important part by enabling the plant to obtain other equally necessary mineral constituents which they could not otherwise procure, owing to their total insolubility; this is the case with silex, the constant presence of which in many plants was long an enigma to those physiologists who believed plants to be capable of absorbing liquids only. It is now, however, pretty satisfactorily proved, that the silex is rendered more soluble by chemical combination with potass prior to its absorption by the roots of plants.

"Thousands of years have been necessary to convert stones and rocks into the soil of arable land, and thousands of years more will be requisite for their perfect reduction,—that is, for the complete exhaustion of their alkalies." One of the obvious advantages of the small quantity of alkali capable of solution at any given time in soil, in addition to its preventing waste by the solvent power of water, is, that were the one-twentieth part of the quantity contained in the richest soil, soluble at any one period, not a single plant could grow in it. Nothing is easier than to destroy vegetation by adding soluble alkali to the soil;—witness the effects of hot lime, and still more of kelp, when injudiciously applied.

It appears that a supply of alkalies, ready for assimilation, is requisite during the *first periods* of the germination of plants; for De Saussure found that "a plant, which has just broken through the soil, and a leaf just burst open from the bud, furnish ashes by incineration, which contain as much, and generally more, of alkaline salts than at any other period of their life." Our author considers, and we are inclined in some respects to agree with him, that one cause of the great fertility of many soils, when first brought into a state of cultivation, depends upon an accumulation of alkalies in a state capable of being absorbed by plants, and yet apparently combined in some manner so as to prevent their being injurious by their excess. And it is upon this principle that he accounts for the great fertility of the soil of Virginia when it was first brought under the plough:—"Harvests of wheat and tobacco were obtained for centuries from one and the same field without the aid of manure."—(p. 148.) We said we agreed with the author in this opinion, *in some respects:* this restriction was necessary on account of two deductions which he makes from the above statements, and which prove to us that he has erred in ascribing too much influence to the alkalies, considered separately without taking into consideration the other ingredients with which they are combined;—for example, he observes at page 149—

> "Let us consider the condition of the country around Naples, which is famed for its fruitful corn lands. The farms and villages are situated from eighteen to twenty-four miles distant from one another, and between them there are no roads, and, consequently, no transportation of manure. Now, corn has been cultivated on this land for thousands of years without any part of that which is annually removed from the soil being artificially restored to it. How can any influence be ascribed to humus under such circumstances, when it is not even known whether humus was ever contained in the soil?" "The method of culture in that district completely explains the permanent fertility." "A field is cultivated once every three years, and is, in the interval, allowed to serve as a sparing pasture of cattle. The soil experiences no change in the two years during which it there lies fallow, further than that it is exposed to the influence of the weather, by which a fresh portion of the alkalies contained in it are set free, or rendered soluble. The animals fed on these fields yield nothing to these soils which they did not formerly possess. The weeds upon which they live spring from the soil, and that which they return to it as excrement must always be less than that which they extract. The fields, therefore, can have gained nothing from the mere feeding of cattle upon them; on the contrary, the soil must have lost some of its constituents."

If any farmer who had the least knowledge of agriculture were to read the above statement and declare that his experience permitted his believing it, we would, most willingly, throw aside all we have hitherto learned about farming operations, and commence to learn anew our alphabet of agriculture. There is scarcely a sentence we ever met with that exhibits more strongly the blinded bigotry with which a person will at times endeavour to reconcile facts with his preconceived opinions. The great and important fact which our author has so completely overlooked in the above most specious train of argument is, that the same chemical elements may exist in different states of combination, in one of which they may form the best possible food for plants, whereas in the other they are completely useless; and, consequently, that one-half of the quantity in the former or active state, is far preferable to double the amount in the latter or inert condition. Now, we have no hesitation in affirming that this well-known fact contains the true explanation of the success of the peculiar mode of cultivation adopted in the neighbourhood of Naples. The very idea of the soil having borne crops of corn every three years, and during the interval served as pasture, "for thousands of years," and yet not possessing humus, is utterly absurd. Our author himself confesses that humus is the *constant* product of the slow decomposition of *all animal and vegetable substances*, and yet he tries to throw a doubt over the existence of this substance in a soil, which, "for thousands of years," has contained animal and vegetable substances in all the various stages of decay! The true statement of the case appears to us to be the following:—The soil contains an abundant supply of all the mineral constituents required by a crop of corn, but from want of *animal manure* is unfit to produce good crops in a continuous rotation; the method of culture adopted, therefore, is one which the peculiar situation of the country renders the most economical, if not the only way of supplying this deficiency. Scarcely any soil is so poor as not to produce a scanty herbage, because nature has endowed plants with the power of extracting a certain quantity of nourishment from the air, and, consequently, they can procure a pinched and unsatisfactory supply of food from the air alone, sufficient to support them in a languishing condition; and were they allowed to wither and die in the soil, their decomposition would yield a richer repast to the weeds of the next year's growth, but still much of their woody and fibrous portions would escape decomposition, and the result would be, that, in a few years, the field would be in the condition of poor moorland. Not so, however, when cattle are fed upon the plants produced; in this case, although, no doubt, there is an *absolute* loss if we were to take the *weight* of the various elements, still there is an *absolute* gain if we consider the *condition* of the compounds; because the portion which is returned to the soil in the form of excrement is reduced to a fine pulp, intimately mixed with a highly putrescible animal fluid, and the result is, not only the effecting of a complete decomposition of those portions of vegetable matter contained in the excrements themselves, but also of much of that in the immediate neighbourhood of the droppings; and in this manner the *activity* of the soil, if we may be allowed the expression, is increased to such an extent, that when the seed is sown for the next crop, there is an abundant supply of nourishment ready for the "*first stage of the growth of the plants;*" and by this means, together with the nature of the mineral matter of the soil, and the excellence of the climate, the ultimate success of the crop is ensured. The argument that, because "the animals yield nothing to the soil that it did not formerly possess," therefore "the fields can have gained nothing from the mere feeding of cattle upon them," is most illogical, and shews greater want of physiological acumen than we could have supposed in one who so justly observes his character of extreme accuracy in all purely chemical inquiries. Let us, for the sake of comparison, carry the argument into the animal kingdom, and see what would be the result. The young of all mammiferous animals feed upon, and are brought to maturity by, a peculiar fluid produced by the mother, namely, milk; but milk is produced from the blood, and the blood from the food, and it is certain that the milk contains no element which did not previously exist in the blood and in the mother's food; and consequently, if the existence of certain elements in the food of young animals was all that was requisite, independent altogether upon their state of combination, it would follow that the young of all animals would be nourished quite as well by their mother's blood as their mother's milk, the falseness of which supposition needs no argument for its establishment. In the paragraph which immediately follows the one from which we have been quoting, our author endeavours to prove that a soil of humus cannot produce corn; this we willingly admit, but we also maintain that the opposite is quite as true, namely, that a soil *destitute of humus* cannot produce corn. Then follows the sentence upon which we have already descanted at full length in the former part of this notice, namely, M. Liebig's opinion as to the deficiency of alkalies being the true cause of the unfitness of sandy soil for bearing wheat.

We are happy again to arrive at a point where we can confess our gratitude to the author of the work before us for some very valuable observations. He now proceeds to show that the natural distribution of forest trees depends greatly upon the mineral constituents of the soil; for example—

> " It is not mere accident that only trees of the fir tribe grow on the sandstone and limestone of the Carpathian Mountains and the Jura, whilst we find on soil of gneiss, mica-slate, and granite in Bavaria, of clinkstone on the Rhone, and of clay-slate on the Rhine and Eifel, the finest forests of other trees which cannot be produced on the sandy and calcareous soils on which pines thrive." " It is explained by the fact, that trees, the leaves of which are renewed annually, require for their leaves six to ten times more alkalies than the fir-tree or pine."

According to the analysis of De Saussure, 1000 parts of dried oak leaves contained 24 parts of alkalies, whereas the same quantity of pine leaves yielded only 4½ parts. Phosphoric acid is the next mineral constituent of plants which our author examines in relation to its effects upon the fertility of the soil. It has been found in the ashes of all plants hitherto examined, and is always combined with alkalies or alkaline earths. The seeds of different kinds of corn contain abundance of phosphate of magnesia. This substance is, however, readily supplied to the plants, as all fertile soils invariably contain it, and it is found associated with several common minerals. We now come to the consideration of the theory of fallowing. Our author takes it for granted that the use of this process consists in its allowing the more rapid disintegration of the soil by the weather and tillage, and thus producing an additional supply of alkali in an efficient state. We are quite prepared to agree with this as one of the most obvious uses of fallow, but we cannot believe it to be the only one, on account of a fact to be stated immediately. To explain the reason why green crops can be substituted in many cases for bare fallow, M. Liebig observes—

> " For the purpose of agriculture, it is quite indifferent whether the land is covered with weeds, or with a plant which does not extract the potass inclosed in it. Now, many plants of the family of *Leguminosæ* are remarkable on account of the small quantity of alkalies, and salts in general, which they contain. The *Vicia faba*, for example, contains no free alkali, and not one per cent. of the phosphates of lime and magnesia. The bean of the *Phaseolus vulgaris* contains only traces of salts. The stem of the *Medicago sativa* (lucerne) contains only 0.83 per cent.; that of *Ervum lens* (lentil) only 0.57 of phosphate of lime with albumen."

Now it is no doubt true that these plants constitute fallow crops in some places, but by far the most common crops of this kind are the turnip and potato, both of which remove more alkali from the soil than the heaviest corn crops; for we have already seen that an average crop of turnips will contain at least 92.4lbs. of alkali, whereas a heavy crop of wheat will not contain above 50lbs.; and again, the potato, if considered as producing 6¼ tons per imperial acre, which we consider a fair average, will yield 50lbs. of alkali per acre, as we have found by careful analysis that this plant contains about 0.3 per cent. of alkalies. The quantity of alkali here is, therefore, quite as great as in a crop of wheat, and it is more than twice as much as is contained in a good average crop of oats; and no one will presume to state that two crops of oats could be substituted in the rotation for the potato crop without injury to the soil, although, were fallow and green crops useful only in so far as they admitted of the accumulation of alkali, this should be practically true.

(To be continued.)

ON DEVON AND DURHAM CATTLE.

(TO THE EDITOR OF THE CORNWALL ROYAL GAZETTE.)

SIR,—The interest you evince for the promotion of all agricultural pursuits, will be some apology for intruding my remarks in the columns of your valuable journal.

The all-absorbing question amongst the agriculturists of this county at present seems to be, whether Durham cattle can be propagated with greater chance of success and advantage to the breeder than our primitive sept of Devons; and the uncourteous style in which those are assailed who will not admit the superiority of the Durham cattle, induces me to offer the following remarks on the comparative merits of the different breeds in question.

It will be at once perceived, Sir, that there are some very striking features in the "new comers" to render them worthy the attention claimed on their behalf. We hear of their immense size, of their aptitude to fatten, of the ready return they make, and such-like specious though illusive arguments. It may gratify the mistaken vanity of a farmer to obtain a larger price per head than his neighbours, but the price per head forms no criterion of his profits; for, suppose 5 acres of land will fatten 3 Durhams of 9 cwt. each, it will also fatten 4 Devons of 6¾ cwt. each. This there is no reason to doubt on our Cornish soils, and it will be at once apparent that the profit must be on the side of the latter: for not only is the smaller beef more valuable in the shambles, but it has been produced at less cost; because if the cattle are left to thrift for themselves, the smaller bullocks get fat sooner: I speak of the best Devons, such as Quartly's, Davey's, and others, which are to be obtained at much less prices than inferior Durhams. But, Sir, it must easily be perceived, on inspection of the different animals, that nature has adapted them for different soils and climates. The Durhams have remarkably thin hides, short hair, and are of tender constitution, calculated with extraordinary keep in sheltered situations to arrive at great weights: the Devons, on the contrary, are protected by thick hides and long hair, with a hardy constitution agreeing with the bleakness of our unprotected hills, combined with an aptitude to fatten, equal if not superior to any of the cattle kind. This is no speculative opinion or unadvised assertion. I will quote one of many instances to bear me out:—A trial took place at Woburn some years since with four oxen,—a Devon, a Hereford, a

Sussex, and a Leicester (unfortunately no Durham). They were all fed on oil-cake, turnips, and hay, for an equal number of days; and their respective weights at each period were as follows:—

	Food given.	Return.	Consm.	1st wt.	2nd wt.	Live wt. gained
				c. q. lbs.	c. q. lbs.	c. q. lbs
DEVON.						
Oil-cake..	450	7	443	14 2 14	19 1 0	4 2 14
Turnips ..	3000	364	2636			
Hay	475	32	443			
HEREFORD.						
Oil-cake..	450	26	424	18 1 0	21 0 25	2 3 25
Turnips ..	3040	328	2712			
Hay	467	34	433			
SUSSEX.						
Oil-cake..	450	17	433	16 2 0	19 3 0	3 1 0
Turnips ..	3030	375	2655			
Hay	443	51	392			
LEICESTER.						
Oil-cake..	450	15	435	15 2 14	18 2 0	2 3 14
Turnips ..	3010	358	2652			
Hay	447	47	400			

Now from this it will be seen that the Devonshire ox gained 185lbs. of flesh more than the Hereford ox upon a nearly equal quantity of food of similar quality, and that the cattle throve in an inverse proportion to their weight, the smaller having the advantage.

I have cited this example rather to show how experiments should be made, than to claim an advantage from the result; for we not unfrequently hear of experiments made in so vague a manner as to be utterly unworthy of notice—such, for instance, as a portion of Devons and Durhams having been grazed and stall-fed together, and this without the most remote idea of the share of food consumed by each; but the latter proving the heaviest, and therefore most valuable, the unwarrantable conclusion is at once assumed that it must be the best breed, without considering the fact that the Durham consumed one third more food than the Devon. Such experiments (if they deserve the name) tend to delude the unwary; but when the animals are tested in a fair and reasonable way, this species of quackery will be exposed, and the Durhams, now so fashionable, will cease to attract attention.

To illustrate the fact of the ravenous propensities of the Durham breed, look at them as general stock. Do they then maintain a creditable condition with a limited quantity of food? I refer to those kept in this county, the greater part of which I have seen, and which will be found on inspection mere walking shadows—carcases of bones; contrast them with the Devon cattle of the Rev. Dr. Rodd, of Trebartha, in this county, and what a change is seen! There is scarcely a bullock in the rev. gentleman's possession but is fit for the market—nay, much fatter than some of the Durhams I have alluded to can be made.

I have already, Sir, trespassed too much on your indulgence, and in conclusion would beg to observe for the benefit, I hope, of some of your numerous readers who are much interested in the subject, that they perhaps are not aware of the great fertility and richness of soil which constitutes the native vales of Durham cattle, as great in comparison with our Cornish soils as their lofty timber to our stunted bushes. Undergoing, as the Durhams do, a process of fattening from the pail to the slaughter-house, by means of linseed-meal, hay-tea, oil-cake, &c., &c., to be exposed in markets where large joints sell better than those of moderate size—in such situations I do not question their superiority and utility, but I am as morally certain that it is unwise to obtain size beyond what the kind of keep and character of the soil are calculated to maintain, and I would take the liberty of advising the true agricultural patriot to argue no more on hypothesis; and those who are already wavering on this important subject will, I hope, regard the unprejudiced opinion and statistical facts of,

Your obedient servant,

DEVONIAN.

St. Austell, 27th Oct., 1841.

DISEASE IN ELM TREES.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—Within the last few months many of the noble elm trees which grow on the borders of the footpath in the village of Lewisham, and also on Blackheath, have been gradually losing their bark. At first it was supposed that the destruction had been wilfully caused, but it is now generally believed that the appearances are either the result of disease, or are produced by some insect; while some are of opinion that they arise from some noxious properties escaping from the gas-pipes, which have been introduced into the vicinity within the last year.

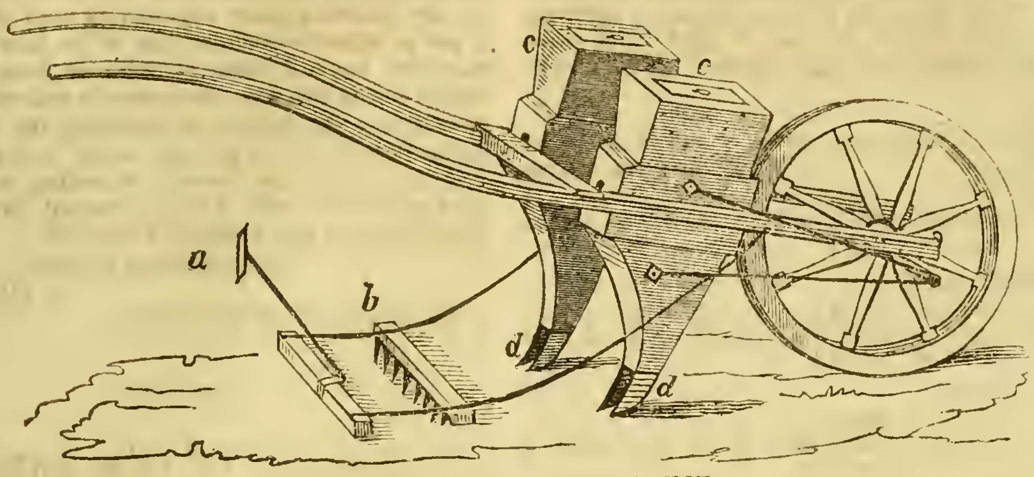
The outer bark is first observed to shrink and open with longitudinal fissures; it then becomes hollow and detached, so that a stick may be passed between it and the tree, and soon afterwards it falls off in patches around the stem. The inner rind when exposed is found to become soft and spongy, and very soon rotten. The foliage of the trees thus attacked has a sickly colour till the leaves fall and the trees die.

If any of your arborist readers are capable of assigning a cause for the above appearances, or of suggesting a remedy for or protection against the evil, and will have the goodness to do so through the medium of your useful magazine, they will furnish acceptable information to many, and much oblige,

AN INHABITANT OF LEWISHAM.

OPINION ON THE VALUE OF RAPE DUST GIVEN BY MR. FFRANCE AT THE MEETING OF THE ASHTON AGRICULTURAL SOCIETY.—Mr. Wilson Ffrance acknowledged the toast, and then proceeded to say he had acted on a recommendation given at last year's meeting by one of the judges, Mr. Outhwaite, on the advantage of applying rape dust as a manure on moss land. The quantity he had used was after the rate of 16 cwt. to the statute acre for turnips and potatoes, and 15 cwt. for carrots, and he believed the experiment had answered admirably; indeed he was so satisfied of the advantages to be derived from the use of rape dust as a manure, that he had made arrangements to import 100 tons from Holland into the river Wyre, and he desired to say, that if any gentleman would wish to make a trial of a ton or two, he should be most happy to accommodate them with it at cost price. He had been twitted for quoting, but he would just venture to say, before sitting down, that he very heartily recommended Mr. Binn's work on Ireland to the attentive perusal of all farmers and agriculturists. *(Cheers.)*

CULTIVATION OF THE CARROT.



CARROT SOWING MACHINE.

a Marker for guiding the machine in sowing the next double drill.
b Rake for covering the seed.
cc Seed-boxes.
dd Coulters for making the ruts for the seed.

The Messrs. Drummond, of Stirling, have handed us the following communication, which was lately sent them by Mr. Ross, of North Berwick, an excellent agriculturist, on the subject of the cultivation of the carrot. It will, we have no doubt, be read with interest by our agricultural friends :—

Abbey, North Berwick, Oct. 2, 1841.

GENTLEMEN,—Along with this letter you will receive a plan of the machine[*] I use for sowing carrot—it sows fully two acres per day, two drills at a time, at 11 inches apart, and can be drawn by two men, or, what is preferable, a small poney. The quantity of seed sown per acre, varies from 6 to 8 lbs. according to quality and local circumstances. The cultivation of carrot is a profitable branch of husbandry where soil and localities are favourable ; they seem not to thrive, however, but upon light loams approaching to sand, with a free subsoil. The best manure for them I have found to be sea weed ; farm-yard dung does not answer well, the roots from it being more subject to grub or worm, and to get forked an inch or two below the surface. The sea weed is ploughed down in October or November, and, as light soils are more subject to annual weeds, we do not give another furrow previous to sowing, in order that the surface may derive all the advantage of what the winter's frost may have effected in the killing of their seeds. As a substitute for a furrow, the field is gone over with Finlayson's harrow or grubber, and afterwards rendered sufficiently fine with the common harrow and a light roller, all weeds being carefully removed. While farm-yard dung was used, the crop was frequently attacked by the worm, for which newly slacked lime was applied over the parts affected, which had good effect; salt did equally well, which gave me the first idea of using sea weed. The best time for sowing carrot in this district, is from the 20th to the end of March. The varieties I cultivate are the Long Red Surrey, Long Orange, and the Altringham, the two former sorts being better adapted for the town market, and the latter more profitable for farm use. Last year I had five Scotch acres of the Long Orange, which produced 96 tons, 13 cwt. Three years ago, I had a few tons of the large new white carrot, their produce being at the rate of 15 tons per acre ; but, as the other kinds were preferred in the market, and sold higher, they were not sown a second time. About six weeks after the carrots are sown, when the young plant is sufficiently advanced to mark the course of the drills, Dutch (or thrust) hoes are applied betwixt the drills, the plants being carefully hand weeded, they being at this age too tender to admit of thinning, About two weeks afterwards they are gone over a second time with the Dutch hoe, weeded, and at the same time thinned, leaving the plants at four to six inches apart. I have tried small hoes for thinning, but could never get the work by that mode done so much to my mind as by the hand. There is nothing further necessary than an occasional hoeing as required.

Carrots do not attain their full growth before the end of October, and, if the weather be good, greatly improve during the month of November, as frost does not injure them. What may be called a good crop varies from 18 to 22 tons per Scotch acre. My plan is to lift them during the months of November, December, and January, in quantities as they may be sold, by which means they are always fresh and in their full weight ; for if stored for any length of time, however carefully done, they lose considerably in weight. What may be required for our own use are after January lifted, and stored in an out-house with fresh sand. In the process of lifting and topping them, care should be taken not to slice the end off the carrot with the knife, which prevents their keeping. Neither should they be thrown carelessly out of the hand, for by coming in sudden contact with any hard substance, they crack lengthwise, which, although not seen at the time by the careless observer, is very injurious to the carrot. The tops or leaves are given to the milch cows, and what are not consumed in the green state are carried off the field and spread on grass or stubble, any of which is better than the sandy surface of the carrot field, and there undergo the process of hay-making, which is sometimes precarious at that season ; but when the object is attained, they are brought home and stacked, affording a nutritious food for the cows, of which they are very fond, and producing, while they last, a marked improvement on the quality of both milk and butter. I remain, gentlemen,

Your most obedient servant,

ALEX. ROSS.

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[*] One of these machines has been procured for the Agricultural Museum.

SOME ACCOUNT OF THE CULTIVATION OF A COLD CLAY FARM.

BY THE REV. G. F. HOLCOMB.

(From the Journal of the Royal Agricultural Society of England.)

TO PH. PUSEY, ESQ.

SIR,—The conversation which took place between our Secretary, Mr. Hudson, and myself relative to the cultivation of heavy land, was in consequence of my observation of the successful practice of Mr. R. W. King, a considerable landed proprietor of this parish, in growing turnips upon cold soil, ill calculated naturally for the purpose The part of his farm to which I alluded is situated upon the highest point of Cambridgeshire, twelve miles distant from Cambridge, and bordering upon the county of Suffolk; the surface of the soil is tenacious loam, shallow, upon a subsoil of cold clay.

Mr. King's method is, in the first place, to drain his land, which is done with dried turf procured for the purpose from the fens, similar in appearance to what used to be consumed instead of coal in the cottages; the length varies from 12 to 16 inches, according to the goodness of its quality, some being more brittle and more easily broken in carriage than others; the width and depth of the best turves is about three inches; the retail price is now 7s. per thousand: four horses in a waggon easily bring 3000. Supposing the drains to be a rod, *i.e.* 5½ yards, asunder, the usual distance, 2000 turves amply suffice for one acre of land; the durability of the drainage depends upon the soundness of the clay, the depth in the earth at which the turf is buried, and the goodness of turf, which varies in different parts of the fen. I have myself been a tile-maker for my own consumption, and used many thousands, but after twenty years of practical experience of tile and turf, prefer the latter; it is two-thirds cheaper than tiles, and, where sheep-folds are set, not so liable to have the drains broken in, the turf giving way to the drift, whereas the tile breaks and the earth follows. I now cut across the old tile-drains to make turf ones in opposite directions, and deeper in the ground. The tile-drains are frequently found to be destroyed—rats, rabbits, moles, or narrow-wheeled carriages passing over them, are all injurious. Turf is found to be sound which has been laid 16 years, but it pays well to renovate the drains every eight seasons. The *shape* of the drains corresponds with the turf. I send a slight sketch. The first operation is with a double-breasted plough, which makes a deep impression in the land: the labourer then takes a shovel to clear out the loose earth; afterwards he uses the spade; lastly he uses the land-ditch tool, with which the lower part of the drain is excavated to the depth of 12 inches more: the width of this aperture is about three inches at the top, and is gradually reduced by the shape of the implement to one at the bottom. The drain is perfectly cleared by a drawing-tool or hoe. The turf is then pressed into the drain by the foot to its depth, which is about three inches, leaving an open course for the water of about nine inches deep underneath; when expanded by moisture, with the earth filled in open, it will bear any weight of horse or cart. The party of men who undertake the job generally carry to the field a small iron drift, with which they break or remove any stone that may interrupt the spade; if a large one they dig it out, filling the space with clay out of which the drain is formed for the turf. A little boy or girl, from six to eight years old, commonly attends each drainer, with a tin mug, often an old powder-tin, attached by a bit of string to the end of a stick, and filled frequently with water out of a pail, with which the child follows the spade, and by pouring it out when necessary loosens any stiff piece of clay or earth; when not wanted, the boy shovels out the moulds previous to the operation of the spade, or collects the stones cast out, for which he is paid per load. The price of draining varies from 3s. 6d. to 5s. per score rod, including boy's wages; a good hand will execute 14 rod, some more, in the day. Sometimes two, or even three, spades' depth is taken out to get a proper level, or to penetrate the clay, when the price of course rises in proportion. If the shoulders of the drain give way in a gravelly or galty place, bushes or stubble are placed under the turf, which is doubled to fill a larger aperture.

Land-ditching, as it is here termed, is a work in which labourers take an interest: families work together; there is a competition between different parties, which is a stimulus to all; the work is never too hard for children—their attention must be always engaged; and the advantages arising to landlord, tenant, and labourer, are so abundant, that I hope I may be excused in prolonging this communication, as well as in earnestly recommending this simple and economical method to all classes not convinced by experience of the benefits arising from frequent drainage of surface-water in a heavy country.

For the growth of turnips on this heavy soil, Mr. King's method is to plough his land after wheat upon eight furrow ridges, twice if necessary, during winter: early in the spring, about April, these ridges are split by the plough; the manure is ploughed in as upon the Northumberland system. These ridges are not disturbed till the time of sowing turnips, when he takes a shim, which is a sharp piece of iron about 3½ feet long and three feet wide, with a sharp edge, attached to a pair of wheels like Kentish ploughwheels, and cuts under every ridge and manure, ridge after ridge, throughout the field; this operation destroys annual weeds as well as ploughing. The earth in a pulverized state, and manure which has had time to work, are mixed together; and the seed which is drilled upon it grows with astonishing rapidity, and for two years has produced such a crop of turnips as I never saw upon such a description of soil. Sometimes they are drawn off; at others fed upon the land, when good weather permits.

Brinkley Rectory, Newmarket, Feb. 15.

NEW VEGETABLE.—At the meeting of the Horticultural Society on Tuesday, Dr. Lindley drew attention to a new vegetable lately introduced into this country, and grown successfully at Chiswick, which is likely soon to become extensively cultivated for our markets. It is known by botanists as the Oxalis Deppii, and the flavour both of the stalks and the tubers is characteristic and quite distinct from anything previously known at our tables. It has been grown extensively in Belgium, from whence it has been introduced here.

ON LAND-DRAINAGE, SUBSOIL PLOUGHING, AND IRRIGATION.

BY THE AUTHOR OF "BRITISH HUSBANDRY."

(Concluded from page 335.)

So various are the soils and situations of farms, and so many are the gradations between the extremes of light absorbent sands or gravels and cohesive clays, that no uniform system of drainage can be applicable to them all. Our object is indeed rather to excite attention to the subject than to offer instructions on the proper mode for each; which would not only swell this brief notice into a tedious essay, but would doubtless be also thought by those who are professionally conversant with the subject, to savour somewhat of presumption.

It may, however, be observed, that those light loams, or sands and gravels intermixed with a portion of pure clay, resting upon beds of gravel, and which compose the true " turnip soils," rarely require draining: but in those which consist of sandy and gravelly strata, resting upon various kinds of clay (and comprising, perhaps, the greatest portion of the arable land throughout the kingdom,) the water filters through them until it meets with the impenetrable layer by which its further progress is stopped. On this layer the drains should be placed, and sunk into it just so far as to allow a free passage for the water; unless it should be very near the top soil, in which case the drains must be sunk still further down: but, if the soil be wholly clay, it will be useless to sink them lower than sufficient to guard the materials with which they are covered from being injured by the tread of heavy cattle; or, in arable land, from being disturbed by the action of the plough.

It is obvious that the depth of drains, and their distance from each other, must be governed by the nature of the soil. It is also evident that "the flatter the surface, and the stiffer the soil, the greater will be the number required;"* and the intermixture of several different layers renders the drainage more complex and difficult to manage than if the land consists simply of an upper and an under stratum. Generally speaking, however, it is thought that the object will, in most cases, be completely attained, if the main drains be carried to the depth of 30 inches to 3 feet, or at the most to 3½ feet—the depth of the smaller drains, or tributary feeders, being about six inches less. The main drains should be cut deeper than the side ones, in order to prevent the water in them from standing back when the main is full. It will also, in most instances, be found more prudent to carry the main-drains diagonally, across the slope of any rising ground, than to dig them straight down the declivity; whereby a rapid fall is occasioned, which is apt, in heavy rains, to sludge them up with earthy impurities, besides draining the water chiefly from one point; whereas, if placed in a slanting position, they will intercept it in its descent from every part of the land, and thus gradually collect a much larger quantity, without carrying along with it anything to choke their channel. Nor should the cross-drains be cut at right angles to the main receivers; but made to join them in an oblique direction, tending downwards, so as to secure the course of the water in its passage to the outlet. Their distance must, of course, be regulated by the state of the land; for, if it be of a decidedly retentive character, the drains will not act effectually if more than twenty feet apart, and it has sometimes been found necessary to place them at only twelve feet apart. If, however, it be of a porous species, they will act at from forty to fifty feet asunder; but from eighteen to thirty feet may be considered a usual average.*

Notwithstanding what has been here said, it must be understood that, if the ground be nearly level, every advantage should be taken of any declivity which it may offer; and, if entirely flat, the drains should be constructed with a gradual fall to the outlet into which the water is to be discharged, which, whether ditch or rivulet, should always have a deeper bottom than the drain itself. To secure this regular descent, so that the water may run from one end to the other of the drain, without its being in any way impeded or suffered to stand dead, is a matter of serious importance. Although every one knows that water will flow at a very slight inclination from its level, and it may be true that " there is more danger attending the greater than the lesser fall," yet the exact rate at which the proportion of that inclination should be measured in making drains on level ground—or the fall which they should have in order to the attainment of their object—has given rise to considerable variance of opinion among professional men. Thus, in the " Penny Cyclopædia," one foot is stated as sufficient fall for a drain of 300 feet in length, provided the drains be not more than twenty feet apart. One writer assumes that " a fall of one inch in twenty feet is sufficient;"† while another insists that " no drain should have a fall of less than one foot in seventy-five;"‡ others again, one foot in 100, up to 150; and one gentleman, in treating of tile-draining, says, that " tile-drains will act with very little fall; one foot of fall in every 1000 feet in length will be perfectly safe, though it is best to have one foot of fall to every 300 feet of drain."§

Although admitting the superiority of tiled drains in allowing a free passage to the water, yet the soundness of his view of the subject may be doubted, and, on discussing it with an eminent land-surveyor (Mr. Deane, of Tottenham) who has been extensively engaged in drainage, he stated, " that in the course of his practice he always found those hollow drains to continue longest serviceable which had a good fall; and that he would recommend not to be too sparing in giving them such a fall, whenever the circumstances of the case would admit." Perhaps, therefore, a declivity of one foot in 120 may be sufficient to secure a proper current in the main: paying attention at the same time to the fact, that if the water does not run at increased speed towards the bottom of the drain, it will probably occasion deposites of sediment.

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* Penny Cyclopædia.

* It has been held as a rule, to apportion the area of all drains to their length, declivity, and distance from each other. Thus, supposing the length to be 200 yards, and the distance from drain to drain 18 feet, the square feet of surface receiving rain-water in 24 hours will give 1800 cubic feet of rain-water; and taking the sectional area of the smallest, or 2½ to 3-inch tiles, at 7·5, and the water moving in this aperture at the rate of one mile per hour, the number of cubic feet discharged by the drain in 24 hours will be 6600, or nearly four times as much as is necessary to carry off a surface fall of two inches of rain. See Prize Essays of the Highland Soc., N.S., vol. vi. p. 94.

† Carmichael of Raploch Farm, on Tile-Draining.—Prize Essay of the Highland Soc., N.S., vol. vi. p. 85.

‡ Thoughts on Draining.—Quart. Jour. of Agric., N.S., vol. iii. p. 88.

§ Wilson on Tile-Draining.—Prize Essays of the Highland Soc., N.S., vol. vi. p. 14.

It should also be observed that, if the field be of large size, receiving drains, or ditches, must be opened at different distances—say not farther apart than 200 to 300 feet; for otherwise the necessary artificial fall of the drain at the rate of one foot in 120, would bring its excavation to an inconvenient depth, even if the outlet be deep enough to receive it; besides occasioning such a collection of water as during continued rains might endanger its safety by causing it to burst.

A great portion of the heavy arable ground throughout the kingdom is rounded-up into permanent "lands," of various breadth and height, according either to its wetness or to the custom of the country; with the intention of causing the rain-water to run from the surface into the furrows, which act as so many open drains in carrying it off. It is thus not unusual to see good crops of corn growing on the crown of these ridges, while their sides, being bared of the best soil by its collection on the top, are rendered comparatively worthless, and the crop inferior in both bulk and quality; whereas, if the lands were well underdrained, the height of the ridges could be reduced, and, the soil which is taken from their sides being then replaced, the crops would be found equal in every part. This, it is true, is sometimes done, and always with good effect; but those covered drains are most commonly sunk in the furrows, with a view of saving labour, although they could often be more judiciously placed in a different direction, and in no case should their distance be influenced by the size of the lands, as these are in many instances no less than 30 feet wide, and drains may be necessary at half that width. This, however, must not be construed into a recommendation of altering the form of the lands, which is always a difficult and frequently an unprofitable operation; but even when their size, and the inclination or bend of their declivity, are in every respect unobjectionable, and the course of the furrows such as a surveyor would approve, it might perhaps be better to sink the drain in the very centre of the ridge. Some intelligent farmers, indeed, place them within three or four feet of the furrows, and find that plan very advantageous. Should the drains be, nevertheless, made in the furrows, then care should be taken to sink them a few inches deeper than if made in level ground; in order to prevent the injury which might otherwise be occasioned by the tread of horses at plough, when stepping in the trench. Nor should the covering materials which are placed over the water-channel be formed merely of the soil which has been dug out of the drains; for if that be loose earth, it may find its way into the channel and choke it up; or, if it be clay of an impervious nature, and trodden down by the working of the cattle, it will materially impede the good effect of the drainage.

Among the many expedients which have been resorted to for the purposes of under-drainage, none has been longer or more universally employed than stones; and, in situations where they can be found in sufficient abundance upon the land, of a smooth, rounded form, not larger than the size of a man's fist, they will no doubt continue to be used, as good and durable drains can, in that case, be made with them at moderate cost. But if they are to be quarried, or to be carried from any long distance, they become so expensive that many persons have given them up; not only in consequence of that objection, but of others which will be hereafter stated. Schemes have also been adopted—such as the filling up of the conduits with peat, or with bands of twisted straw—and there is one, called "wedge," or "plug-draining," which has been within these few years rather extensively used in some of the strong clays; to which alone it is applicable, and better adapted to pasture than to arable land.

The operation is commenced by cutting a turf of twelve inches wide and six inches deep, followed by other cuts at such an angle down the side of the intended drain as will leave the bottom (at two feet deep) only one and three quarter inches wide; into which the plug is inserted. This is exactly fitted to the channel of the drain, and formed of several pieces of wood, each being six inches long by three and a half wide at the top, and one and three quarters at bottom; connected by iron links and drawn by a chain. Upon this the clay which has been thrown out is replaced, and rammed down upon the plug into as solid a state as possible; after which the plug is withdrawn and the operation repeated. The process is comparatively cheap, but more difficult of perfect execution than may perhaps be imagined, and cannot be recommended as either effectual or permanent; for it must evidently be very subject to break in, and, should any such accident occur, it will not only stop the drain, but that cannot be repaired without its being entirely re-made, as the plug must be drawn out to its very end, and cannot be lifted from the ground.*

In order to correct, so far as possible, the imperfections in these various modes, as well as in the rumbling drains to which allusion has already been made, the system of *tile-drainage* was introduced some thirty years ago, and has since been found so much more effectual, that it has almost universally superseded every plan except that of stone-draining, and is now generally employed throughout those wide districts which are still in want of improvement. On the commencement of tile-draining great objections were made to it, from the suspicion that the tiles would decay; and the outlay of money for their purchase startled both the landlord and his tenant. In process of time, however, it has been found that drains thus constructed many years ago are now as perfect in their operation as when first formed. It has, indeed, been ascertained that good tiles do not perish in the drains; and it has been seen in the account of improvements on Lord Hatherton's property, as well as in the published statement of the drainage of the Netherby estate, (on which some thousands of acres of otherwise unproductive land have been rendered perfectly dry, and fit for every operation of husbandry by the process of tile-draining,) that, when there is occasion to lift any of the drains, the tiles are found in the same perfect state as when they came out of the kiln.*

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* Where it has been successful it has, however, had such good effects, that land which in wet seasons invariably rotted every sheep put upon it, is now stocked without any occurrence of such casualties; and mowing has commenced a fortnight or three weeks earlier than before it was drained. See Farmers' Mag., N.S., vol. ii. p. 98, and vol. xv. p. 67, of the "Papers of the Bath and West of England Society," in which it is stated that on a farm where green crops formerly rotted on the ground, 800 sheep are now fed on turnips throughout the winter.

It must, however, be observed, that really "good tiles" are essentially requisite ; for if only one of them becomes decayed or broken, it stops the current of the water on the spot where it stood, and the injury cannot be discovered until damage, of sometimes a very serious nature, has been occasioned. The operation of draining, although amply returning the outlay, yet being very expensive, it is extremely important to ascertain not only the cost, but the intrinsic value of the tiles when made. Purchasers should, therefore, be cautious ; for if induced by comparative smallness of cost to use those of an inferior quality, they may have cause to find in the course of time that they have been actuated by false economy.

The more compact the tile is made, the stronger it will be, and the more pressure it will bear the better. It should not appear porous ; and, if struck upon by the knuckle, it should, if well made, emit a metallic sound. Being, however, usually made by hand, and very generally by persons who neither understand the kind of clay which should be used in the formation of a tile which will last without decay, nor possessed of sufficient capital to work the clay during the time required for producing it of proper quality, thousands are daily made which are not trustworthy : being not only imperfectly moulded, but "being either too much or too little burned, a night's frost has been known to break the whole tiles laid down in a drain."† The making of tiles demands, indeed, more time, and consequently more capital, than may be generally imagined. When the proper sort of clay has been discovered, it is usually dug up during the course of the year for the entire supply of the ensuing season ; being turned carefully over about the preceding Martinmas, to receive the benefit of the atmosphere throughout the winter. In spring the process of tempering commences, and the tiles are not manufactured until the following summer, as large quantities can only be conveniently dried in fine weather.

It must be evident to comprehension that any common manufactured article of general use, which requires regularity of both consistency and form, can be better made by machinery than by hand. In the making of tiles particularly, the compression of the clay, which constitutes their strength and durability, can be much more effectually performed by the power of a well constructed machine than by hand labour ; and, being equal in point of solidity, no single one is more subject to decay than another. This guards them from the frequent occurrence complained of in common tiles, of drains being stopped by the falling in of an ill-made one. They are also less subject to breakage ; and, being all formed alike, they can be accurately fixed in the drains. Patents have, therefore, been taken out for effecting this desirable purpose upon an improved principle ; one of which, invented by the Marquess of Tweeddale, has been purchased by a company, and brought into very general use.

It is a powerful machine, worked by either horse or steam power, compressing the clay with such force as to render it far more solid and durable than any tiles made by hand. It also moulds them with extreme accuracy, and cuts them of a length to *burn* 15 inches ; whilst if those made by hand exceed 13 inches they are apt to crack, and become so warped in their openings, when burnt, as often to prevent them from being set firmly in the ground. Now, although price is of importance, durability is greater ; and the advantage resulting from increased length will be apparent upon calculating the quantities required to drain a given distance : for instance, say an acre, with trenches 15 feet apart, being equal to 176 rods, would require—

of 15 inch tiles		2323
12½	,,	2788
12	,,	2904

It appears to us, indeed, to be the only invention, for the object which can be justly termed a *machine* : for although ingenious contrivances have been put forward under that denomination, they may be more fairly called *serviceable tools*, as they only cause some saving of labour in the preparation of the clay, while the tile is really moulded by hand in the ordinary manner ; and we feel convinced, upon the most careful investigation, that it has a decided superiority over every other mode.*

The Tweeddale machinery is of very simple construction, and may be briefly described as follows :—

A trough of the exact width of the intended tile is placed at the head of the machine. Into this the clay is put by a workman, and drawn through two revolving cylinders, which compress it so forcibly as to render it extremely firm and solid. The clay, thus flattened to the required thickness by the rollers, is then drawn forwards by the machinery, and passed through moulds, which form it into whatever shape may be required ; the tile being at the same time cut by the action of the machine to any desired length. Thus, every tile being pressed in precisely the same manner, passed through the same moulds, and cut off at exactly the same length, they all acquire an equal uniformity of size, strength, and stability, not to be attained to a similar extent by any other known mode of manufacture.

The tiles, being now made into form, are carried away by an endless web of canvass, over rollers which are turned by the same machinery, and thus travel of their own accord between sheds erected for their reception ; in which they are placed in rows on either side by labourers stationed for that purpose, and are there kept until dried sufficiently for the final operation of burning.

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* See "An Account of Draining by means of Tiles, as practised on the estate of Netherby, in Cumberland, the property of Sir James Graham, Bart., M.P.," communicated by John Yule, Esq., of Glingerbank.—Prize Essays of the Highland Soc., N.S., vol. i.

† Thoughts on the Extension of Draining.—Quart. Journ. of Agric., vol. vi., N.S., p. 330. The effect of *over-burning* is however merely that of rendering the tile brittle ; but if *under-burned* it then imbibes moisture, which, when frozen and afterwards thawed, occasions it to rot and fall to pieces.

* In that opinion the writer is joined by that experienced manufacturer, Mr. Boyle, of Ayr, in his Essay upon Draining-tiles, published in the "Prize Essays of the Highland Society" (No. xxxvii. p. 18), in which he thus expresses himself: "If the machine lately invented by the Marquess of Tweeddale comes into general use (which, from what I know of it, it will, I feel confident), it will supersede moulding by manual labour, as it produces a superior article at a much less expense."

By this means four or five men can, with ease, make in a day from 8000 to 10,000 tiles; and when formed of good clay, and properly burned, they become so densely compact, that, if properly planted in the soil, it may be safely affirmed they would last almost for ever. Nor is durability, after the tiles are laid down, the only advantages in their construction; for every one who has used those made by hand will have experienced the great loss arising from breakage, in consequence of their want of firmness, both in their carriage from the tile-yard and by the labourers employed in putting them into the ground.

The size and form of the tiles and the soles (with which they are generally accompanied) are nearly the same as those in common use, with the exception of their length, which is 15 inches, instead of 12 to 13, as made in the ordinary mode; and the following table will explain the difference of number required by each sort for draining an acre of land at various distances :—

12 in. Tiles.		12½ in. T.	13 in. T.	15 in T.
3630..	At 4 yards apart..	3484....	3351....	2904
2904..	5 ,,	..2788....	2681....	2323
2420..	6 ,,	..2323....	2434....	1936
2074..	7 ,,	..1991....	1914....	1659
1815..	8 ,,	..1742....	1675....	1452
1613..	9 ,,	..1549....	1489....	1291
1452..	10 ,,	..1394....	1340....	1162
1320..	11 ,,	..1267....	1218....	1056
1210..	12 ,,	..1161....	1117....	968

Thus making a difference of 20 *to* 25 *per cent.* in favour of the Tweeddale tiles.

Their prices vary, of course, with the cost of fuel and labour, but are considerably lower than those of the tiles usually manufactured in the neighbouring districts; the company being enabled by their machinery to work not only cheaper, but better, and being satisfied with a less profit upon their large capital than would justly satisfy an individual. Indeed, the extensive demand among the great landholders at the present establishments of the company (of which there are now, we believe, upwards of twenty in active employment in various parts of the kingdom), and the patronage of the Commissioners of Woods and Forests, afford sufficient proofs of their superior value.

Land-draining being, in fact, not only a tedious and laborious, but also in most cases an expensive operation, should never be undertaken but with a determination to do it effectually, by employing the best modes of workmanship and material; so as to ensure, as far as possible, the permanent improvement of the soil. *Stone-drainage* has that effect, but accompanied with these objections:—that the drains require to be sunk deeper than those of tiles, and that, in case of dead-levels, the fall must be made greater than when performed with tiles; also that vermin are apt to burrow in them; and, if the drains be set near to trees, the roots are attracted by the moisture, and the fibres, inserting themselves between the stones, sometimes fill up the conduit. There is also this great disadvantage attendant upon it:—that, as the operation is usually deferred until winter, when the ground is in a wet state, the land becomes so poached by the cartage of the heavy loads of stones which must be carried upon it, as frequently to injure meadow, and to occasion in arable land a serious increase of difficulty in the working.

The main objection, however, is the expense of carriage, which is frequently so burdensome as to occasion a preference to the employment of tiles. It has, indeed, been stated by a very experienced drainer, that, "taking the cost of carriage at 5s. per day for each man and horse, and supposing the materials to be equidistantly situated from the respective drains, so that one cart conveys five loads of tiles, and the other five loads of stones in the day, one cart, proportionally filled with 14-inch tiles and soles, will lay upwards of 100 yards of drain; while one cart, or cubic yard, of stones will only lay 18 yards of a similar sized drain, viz. 6 inches by 12: *being a saving of labour of six to one in favour of tiles.*"*

It may, indeed, be difficult to decide upon the comparative merits of tile and stone drainage, and the expediency of either must in most cases be governed by circumstances dependent upon the facility of procuring either the one or the other. A preference to the former is however not only given by the gentleman who has been just quoted, but also by several other eminent professional writers on the subject, who thus express themselves: "I conceive, were burnt tiles laid on thick soles, and covered with turf, they would be preferable to stones, unless a sufficient quantity be used, and found within a mile of the operations."† "A tile and sole, with a few inches of stones, is the *ne plus ultra* of draining. I would recommend tiles to landlords who give any assistance to their tenants in draining, because they can scarcely make a bad drain with them, and seldom make a good one with stones, the carting of stones obliging them to neglect their other work."‡

In enumerating the comparative advantages and disadvantages of using tiles or stones in the execution of drains, another also states that, "if tile-drains are carefully executed, they will be found in every respect equal, if not superior, to the best stone-drains."§

In the account which has been already mentioned, of the Netherby estate, it is there also stated, that, "from estimates, which are strictly correct in practice, it would appear that, even supposing tiles are to be carried to the field to be drained a distance of three miles, or even more, and that a stone-quarry existed in the field itself, the drainage by means of tiles is by far the cheapest."

Tiles are, indeed, very generally thought to be, "when properly made and well burned, not only the handiest but the best material for setting in the bottoms of drains; for they ensure such a clear water-course, that a drain of two feet deep, set open at the bottom, is more effective than one four feet deep filled with rubble, and is not half so expensive."‖ They should, however, be invariably laid upon soles of about half an inch wider than the tiles, to guard them from slipping off; that mode being found far superior to that of laying them upon a naked bottom, both as securing them from sinking into the soil, and preventing the intrusion of moles, which will otherwise burrow under the tiles in search of earth-worms, upon which they feed, and sometimes occasion incalculable mischief. To prevent their sinking, tiles are often formed with flanges, or broad shoulders to rest upon; but the most obvious remedy to obviate the inconvenience is to lay them firmly upon soles, in the manner of a pavement; and, in sandy soils particularly, it is a necessary precaution.

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* Carmichael, of Raploch Farm, on Tile-Draining.—Prize Essays of the Highland Society, N.S., No. xxxviii. p. 97.

† Stephens on Furrow-Draining.—Quart. Journal of Agric., N.S., vol. iii. p. 293.

‡ Stirling, of Glenbervie, on Tile-Draining.—Prize Essays of the Highland Society, N.S., No. xxxviii. p. 108.

§ Wilson on Tile-Draining.—Prize Essays of the Highland Soc., N.S., No. xxxviii. p. 121.

‖ On Underground-Draining.—Quart. Journal Agric., N.S., vol. v. p. 234.

In laying tiles and soles, the most usual mode is to place them along the edge of the drain, the tile-layer then fixing them alternately in close and regular order; uniting them at the same time so accurately as to guard against any obstruction to the stream of water; he having his face to the work, and moving backwards until it is finished. The farmer should, however, carefully inspect every foot of the drain before he allows it to be covered.

The manner of *connecting the main and minor drains together*, though but little attended to, ought to be correctly done. A very common mode is to break off the corner from a main tile, for the purpose of inserting into it the end of one of the lesser sort, and allowing the water to enter; in doing which the tile frequently breaks to pieces, thus occasioning both waste and trouble: or else a small space is left between two tiles in the main where the minor drain enters, and the aperture is covered with broken pieces. A better mode is, to leave an opening in the side of as many as may be required, for the insertion of the smaller ones, of the exact size of the mouth of the latter; but, in either case, care should be taken to slope the bottom of the cross-drain gently down to the main receiver, so that their junction may be accurately effected.

In regard to the *covering of drains*, even experienced practical men are not agreed. The greater part, indeed, recommend some such porous material as peat, brushwood, tough baulm, or gorse, to be laid over them, to the depth of ten or twelve inches, before the return of the top-soil; as that, if it be a tough clay, will, they say, prevent the filtration of the water, and partly impede the operation of the drain. While some assert, that, "however strong the clay may be, it will not prevent the percolation," for, according to an old adage, "if one drop of water finds its way down, two will be sure to follow;" and a few, as we have seen in the account of wedge-draining, prefer the ramming down of the top-soil, even of the strongest nature, immediately over the drains. It must be admitted, on the part of the latter, that the effect of drainage will, in no great length of time, render the entire of the land so permeable, that the action of the drain will not then be seriously obstructed. The system advocated by the former is, nevertheless, the most prudent; and we learn, from some very experienced drainers, that, when the clay has been laid upon the tiles, it not only retains the water, but has been found to produce more rushes immediately over the drains than on any other part of the field. Perhaps small round stones, or clean gravel, if they can be easily had, are the best covering for the drain, if the soil be clay; or, if permeable, it may be safely thrown back; but, whatever material may be used, a green turf, cut thick, turned the grass side downwards, and put next the tile, between it and the covering, will be found a good precaution to secure it from damage.

It has been remarked by a late writer on agriculture, that, "were draining universally effected, the whole of the now comparatively unproductive soil of the country would to a vast extent be rendered capable of receiving the benefit of numerous modes of fertilizing it. Its returns are immediate as well as compensative; and to hesitate to drain the land is to hesitate to confer a benefit upon oneself." This is no doubt true when applied to the owners of the soil, but cannot be fairly urged to tenants; for no farmer under a rack-rent can be expected to expend his capital in making permanent improvements on another man's estate; and, even if his land be held upon more favourable terms, the proprietor should bear a fair proportion of the charge. Landlord and tenant have, in fact, no separate interest: they are united in one common bond, and, if they do not act together for their joint interest, they will both equally suffer. The landlord, however, has the greatest portion at stake in the profit arising from the melioration of the property, for it remains to him and to his descendants for ever, while the tenant can only reap benefit from it during the duration of his lease.

The term of that lease should, however, govern the amount of mutual remuneration; for the landlord has an undoubted right to share in the profits of the tenant who is farming his property, in a due proportion of increased rent. It is, in fact, a bargain between man and man, without reference to rank, and should be governed by the just, as well as liberal, trading principle of "Live, and let live."

The landlord, therefore, in some cases either pays the whole cost, for which he charges an additional rent; or, more usually, supplies the tenant with tiles at the cost price, merely charging interest on the amount; the farmer carrying them from the manufactory and bearing the charge of labour.* An arrangement, it may be observed, which is conducive to the interest of both; for, if the landlord is to have the future benefit arising from the improvement of the soil, the tenant enjoys the present profit of working it. But, whether looking to present or future advantage, if the landlord has not in his employment a careful and intelligent steward resident on the estate, he will do wisely to have the operation performed under the inspection of a trusty well-informed bailiff, in a manner to render it substantially durable. In doing so, he need not be alarmed, for it will assuredly repay the expense. He will not only be reimbursed by the certainty of obtaining a higher rent for his land, when put into condition by drainage, but it also can never want a tenant; for the farmer not only works cheerfully on a soil of that improved nature, but receives a more certain as well as a larger return for his industry and capital.

One would suppose that, viewing all these advantages, not an acre of wet land would be left undrained of the ten millions which are supposed to stand in need of that improvement in this country. But, although alive to the increased value which it would impart to the soil, yet the undertaking is sometimes impeded by disagreements between landlord and tenant, both regarding the cost of drainage and the terms of lease; as well as by difficulties occasioned by the settlement of many entailed estates, which render the life-tenants disinclined to incur the charge. This, however, will be partly remedied by a late enactment of the legislature, enabling the owners to defray the expense of draining by way of mortgage. In addition to which, a clause will probably be moved for in the next session of parliament, by the gentleman who introduced the bill, to extend its provisions to ecclesiastic, collegiate, and corporate property;—perhaps also avoiding the expensive mode of applications to the Court of Chancery; and it will no doubt be extensively aided by an institution, now in the course of formation, for the employment of capital in the draining of land upon the principles laid down in the Act.

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* With this view, a large manufactory for draining-tiles, on the Tweeddale Patent, has been established on the estate of Earl Grey; and his lordship, with that prudence and liberality by which he has ever been distinguished as a landlord, has instituted an expensive process of draining, at his own cost, for which outlay the tenants pay only common interest.—Journ. of the Roy. Ag. Soc. of England, vol. ii. p. 159.

LANDLORD AND TENANT.

Sir,—If the proprietor of an estate were to sell it after the purchase-money had been paid and the transfer made, it will matter but little what becomes of the property as far as any interest of its former possessor is concerned. And one would suppose from the manner in which it is done, that the letting of farms, like this or any other matters of bargain and sale, was a transaction in which one party's interest ceased at the time, and could not be affected by the party into whose hands the transfer had been made. That such a system of things should continue in this enlightened age must be the wonder to every reflecting mind, when we consider the amount of interest at stake, and the strong barrier it forms to the advancement of improvements it is the interest of all to encourage. In laying before your readers the following remarks, permit me to state my sole reason for doing so is, to draw the cogitations of both landlord and tenant to the subject; particularly the landlord's, as in his hand is placed a power sufficient greatly to influence if not entirely to direct the tenant in it. But before I proceed, I must ask it to be an admitted principle that every landlord should be desirous of improving his property, and that this improvement should be made at as little cost as possible; at least, I think it will be allowed that no retrograde movement should be permitted: but if it does not advance, it may be questioned if it will stand still. In letting his farm, then, the landlord should consider himself as appointing a trustee into whose hands unavoidably is placed an immensity of power for good or for evil as far as the property is concerned, depending in a great degree on the amount of self-interest vested in the trustee or tenant; so that the lessor or devisee should be careful to identify the interest of both as much as possible. Let us consider the nature of the trust to be committed, and we shall at once have before us the effects of good or bad management on property. It is placing as occupier one who, if improvement of property be the object, should have all the inducements acting on him as stimulants which would be the guides and directors of the landlord's designs; and foremost will ever stand the labourer, upon whom, perhaps, less of thought or care has been spent than on any one in considering the circumstances which are to have arbitrary government of his domestic comfort; for although he is in every way an independent person as to his movements, yet from the nature of his position is he most generally a fixture in his locality. Tenants and proprietors may change, but he and his family continue; much influence then must their moral condition have, if not on the actual value of a property, at least on the desirableness of it as an occupancy; and it can but form a subject of deep interest to a proprietor, that they should have over them one who will not only give them a just remuneration for their labour, but also endeavour to promote, by upholding with his influence as well as pecuniary support, those means around them which have a tendency to increase their sense of moral and religious obligations and responsibility—I say religious, because I feel there can be no settled principle so strongly binding on us as this: all others have proved and will prove deceptive. On a just sense of these obligations is founded their dependance on their individual exertions for an honest livelihood, or from the want of them their looking to the parish fund for a portion of it. The distribution of this fund is also almost entirely in agricultural districts entrusted to the tenantry, who, if they have not more than a temporary interest in keeping it within its just bounds, have, as it has before proved, strong temptations in the desire of popularity with the labourer to exceed the bounds of a just disbursement; but especially at this time does it behove the landlord to have a careful eye on this point, as not only is the temptation strong for popularity's sake with the labourer, but a false philanthropy is abroad, adding very considerably to a strong natural desire to help the indigent; so that the force of these influences can only be kept in subjection by bringing into operation all the self interest a landlord can create in his tenantry, or their rent-rolls will soon again become mortgaged to the pauper fund. But as well also is entrusted the cultivation of the farm, the buildings, fences, roads—all which branch out into details too extensively to be entered on in a letter—and in their good or bad management seriously affect the landlord at any time his farm may revert to him for re-letting. Now, to obtain the proper discharge of all these trusts unavoidably put into the custody of the tenant, one would suppose that, setting aside all claims society may have on him to take away the obstacles to increased production of food, the reward of an improved property would be a sufficient inducement to adopt a more sound policy with regard to the letting of property than has hitherto prevailed; and why, it may be asked, are not the examples stamped with the long tried experience of a Leicester or a Richmond, or others of noble name followed more extensively? Surely from the want of information on the nature of the subject, by many landlords not being conversant in agricultural matters, and their estates being committed to the agency of those whose vocations and consequently their interest not falling in the way to obtain it. To every reflecting mind it must be plain, it is not enough to *say* the interest of the landlord and tenant are one, but for their mutual advantage to take and pursue in the letting of farms every means to really make them so. I can conceive nothing more conducive to this than these three things—*certainty* of a long tenancy, liberality in the amount of rent required, and a prudent unrestrictiveness of the tenant to particular courses of farming. To engage a tenant in the amelioration of the soil of his farm, to go hand in hand with his landlord in the improving and altering of buildings, fences, and roads, in the proper management of his labourers, to keep within just and proper bounds the pay or support to families or individuals from the parish fund, to have an individual interest in the religious and moral condition of his labourers, a tenant will and must expect, or you take from him one of the greatest incitements to do good. To see during his tenancy the fruit of a pre-formed expectation in the results of a course which mostly has the future in view—and all experience teaches us that to obtain any lasting benefit in whatever be our object, almost universally must it be a deferred one. If this be true, it brings the question not as to whether a lease is requisite, but to what term of years a lease should extend for the tenant to reap the fruit of his reasonable expectations; but this I must leave as debateable ground, only opining it will not be a short one. But I may be asked, where are the tenants to be found willing to enter into these long leases, for there is quite as much unwillingness on the part of tenants to take as in landlords to let for long terms? This, I think, will be found entirely to vanish on a right understanding of the matter. No man is unwilling to be assured he shall be quietly settled in the same abode for the half or the whole of his life, any more than another would be unwilling to inherit a property from the fear of its fixing the abode of its possessor for the like term. If this be the case, assure him of the innocency of an agreement as to its effects on his pocket, whether for one or twenty years; and he will at once pronounce for the longest term. The question then brings itself not to how long shall I hold, but how shall my rent be arranged so that I may not be a sufferer under fluctuations of prices. The answer to this seems simple, clear, and decided; for it is founded on no theoretical notion, but has in another instance given, in its principle, satisfaction to all secular parties concerned, landlord as well as tenant: and if there is raised no objection to letting and holding nearly one-fifth of the rental value of land, surely the same principle cannot on the part of landlords who have been the appliers of it in the one instance, be objected by them in the other. The commutation of tithes has been matter of congratulation with all secular parties; on the part of the landlord because it has made him master of his own property, and eased him of a charge on any improvement he may make; and for this latter reason does the tenant join issue and echo his landlord's praises of the law, forgetting that unless his landlord were equally compelled to grant him a lease, he has but changed landlords for this portion of his holding, and the change in most cases by no means for the better. In recommending landlords to adopt this principle of letting toward their tenantry which they have made compulsory in the churchman, I cannot refrain from pointing out to them the different position they would be in from the churchman; inasmuch as the one (the landlord) has to look forward with a consoling hope in the reversion of a property improved at no comparative cost to himself, and consequently to an increased rent-roll; while the other, with shame be it said, is placed in an immutable position. Surely it would but have been just, that after a given number of years the tithes should again have reverted to the church, to be again apportioned on the same principle. In the church it has been thought a national evil that *their property* should not be held under a very long lease; so the legislature is pressed to interfere and remedy the defect. But landlords see not the mote in their own eye, though every argument they use or have used in advocating commutations of tithe, serves but to develop the evils of their own practices.

In advocating a liberality in fixing the amount of rent, I would only be understood to mean that the landlord should desire no more than what the farm can justly bear, leaving the tenant a fair trading interest for his capital employed. This, I fear, is not sufficiently looked at, and that a great many landlords too much desire to obtain as high a rent *as possible*, not reflecting on the certain consequence of pushing this beyond what is just and fair. If the rent be raised beyond this point, the tenant, to save himself, generally impoverishes his farm; and this is not the worst—the labourer, as the weaker party, has to make up the deficiency of farm produce by deductions from his rightful wages, or in a less consumption of labour on the farm; and then a just retribution follows, of which the riots of 1830 give a fearful example. In covenants of leases and agreements I do see a decided improvement within these few years; so that us tenants have much to hope in the better understanding of this portion of my subject; and as the propelling power has once been placed here, I do not doubt we shall advance at a *steaming* rate. And now, Mr. Editor, fearing lest I should tire both you and your readers, I will conclude, and remain,

Your obliged constant reader,

Edward Wyatt.

Upper Marden, near Petersfield, Oct. 23.

TWO-HORSE PLOUGHS.

TO THE EDITOR OF THE MAIDSTONE GAZETTE.

Sir,—At this time, when farmers are told that their welfare depends upon the increase of their produce by their own exertions, nothing can be indifferent that tends to promote that object; and as the economical employment of horses tends indirectly to promote it, by increasing the surplus produce available for market, I address you upon the two-horse ploughs—a subject which has several times occupied your columns.

At the commencement of the Rochester and Gravesend Agricultural Association, about eight years since, I directed its attention to this matter, and, after repeated exhibitions of one of Ransome's two-horse ploughs, I succeeded in exciting an interest upon the subject; but as the round plough, as it is termed, was objected to by many, Mr. Smart, of Rainham, invented a turn-wrist plough for two horses. This has been subsequently improved by Messrs. Ransome, and was exhibited yesterday at the ploughing match, when it was generally admitted that its performance was equalled by few, and surpassed by none of the numerous ploughs that were started. After dinner I introduced the subject, and engaged to prove that a saving equal to from thirty to fifty per cent. upon the rental of the land could be effected by substituting the two for the four-horse plough. In consequence of that engagement, I send you my calculation; and for this purpose I take the usual six-course system of this district, which consists of turnips, barley, beans, wheat, clover, and wheat. For six acres of this course there are nine ploughings, viz:—5 for turnips, 1 for barley, 1 for beans, 1 for wheat, 1 for ditto.

These ploughings with four horses cost 6*l*. 6s., at fourteen shillings each, and with two horses 3*l*. 3s., leaving a difference of sixty-three shillings, or ten shillings and sixpence per acre; and supposing the rent to be twenty shillings per acre, the saving is more than 50 per cent. upon it. I presume it will be admitted that an acre of land cannot, upon the average, be ploughed with four horses at less than fourteen shillings.

When I introduced the two-horse plough, it was contended that the land in this district could not be ploughed with two horses, but, after repeated trials at the ploughing matches of the association, upon the various soils of the surrounding parishes, this objection grew weaker and weaker, and the exhibition yesterday has dissipated whatever doubt remained upon the subject. The argument now mainly relied upon for the use of the four-horse plough is, that in other counties, Essex, for instance, where the two-horse plough is used, four horses are kept for the cultivation of one hundred acres of arable land, and in Kent only the same number are required, where the four-horse plough is employed; and from this an inference is attempted to be drawn, that ploughing with four horses is as cheap as with two; but this argument appears to me to have no force. Essex, though economical in its mode of ploughing, may be wasteful of animal labour in other respects, and Kent, on the contrary, may be wasteful in ploughing, and economical in other matters. But the question is, not what is done in Essex, but why should four horses be used in Kent when two only are required? It is for the purpose of obtaining the solution of this question, through the medium of the *Maidstone Gazette*, the columns of which are always open to every communication relative to the welfare of agriculture, that I now address you. It is, as was observed yesterday, scarcely possible to discuss questions of this nature at the convivial board; the press affords the only way by which conflicting opinions can be tested.

I remain, Sir, your obedient servant,

Hermitage, Oct. 30. THOMAS BENTLEY.

RESULTS FROM GUANO MANURE.

FROM MR. SMITH, GUNTON PARK, NORFOLK.

Applied 200lbs. to an acre, and on the same field on an equal space of land fifteen bushels of bone dust. Both were drilled into the ground with seed wheat. The bone dust gave four and a half quarters of wheat, the guano six quarters two bushels one and a half pecks.

FROM MR. WESTCAR, BURWOOD, SURREY.

Had but a few pounds' weight, which he applied to five rods of earth; dunged the remainder of the field with the best farm-yard manure, at the rate of eighteen load to the acre; drilled in Barley. Five rods of the dunged part of the field gave thirty-five bushels of barley—the five rods manured with guano gave thirty-nine bushels.

FROM MR. GEO. HARRIOTT, NORTH WALTHAM, BASINGSTOKE.

The small quantity I received I sowed with some barley on the 1st of May last, without ashes or charcoal. The weather was very dry when the guano was used; the barley came up three days sooner than elsewhere, it was much more luxuriant during all the season, and, as well as I could ascertain from so small a quantity, compared with an equal portion of land not sown with guano, the produce was rather more than half as much more corn, and double the quantity of straw. If it had been sown earlier, I am convinced it would have done more good. In the early part of June I dressed about ten perches for Swedes: I mixed the guano with ashes, and drilled in with the seed; on either side I used bone dust; the season was very dry, and continued so for three weeks; the askes mixed with the bone dust were moist—those with the guano fresh burned and dry, consequently the Swedes dressed with the moist ashes came up a fortnight sooner than those dressed with guano and dry bones; but since the rain vegetation has been very rapid, and guano has quite given bone dust the go-by. From what I have seen, I have every reason to think it will form a most valuable manure.

It was applied to some barley in Norfolk in 1840, and this year the clover on which it was sown has produced half a ton more than any other part of the field. This is important, as most artificial manures do good for one season only.

FROM MR LOVE, SHOREHAM, SEVENOAKS.

I beg to inform you I have made trial of the guano, and am happy to add that it has answered my most sanguine expectations. I mixed 14lbs. in the first instance with two bushels of ashes, and, although the weather was very dry, I could perceive a marked differrence in the growth of the plants a few days after they made their appearance. Encouraged by my success, I then mixed 28lbs. with fifteen bushels of ashes, and applied it for turnips by sowing broadcast on the land, and harrowing it in lightly. As we had frequent showers at the time, the seed soon vegetated, and the plants grew away from those manured with dung and mould. In each case I applied it at the rate of two cwt. to the acre.

FROM MESSRS. CORMACK, SON, AND OLIVER, FLORISTS, NEW CROSS, DEPTFORD.

We have to express our regret that, through the improper conduct of the foreman who was lately in our employ, the guano you have been kind enough to send us has not received a fair trial on our land; but we can bear testimony to its excellence when applied to grass and turnip crops, because we have known it to be applied in Lancashire with very marked success, producing a healthy vigour to the appearance of vegetation, peculiar to itself. With Italian rye-grass it has proved itself very efficacious, and on the whole we believe it to be a very valuable manure.

FROM MR. JOHN CRANE NOTT, HALLOW, WORCESTERSHIRE.

Trial on Hops.—I have much pleasure in bearing testimony to the beneficial effects of the guano manure you were good enough to send me. I applied it to my hop grounds, and, in order to give it a fair trial, I put about a pint to every alternate hill in every row. The effect was most extraordinary: those hills on which the guano was applied were most luxuriant, while the adjoining ones, not so manured, were sickly and weak.

My neighbour, Mr. John Winnell, of Braces Leigh, speaks most favourably of the trial he made upon artificial grasses and hops, on both of which it had a most beneficial effect. I feel confident if the guano can be bought at a moderate price, it will be the most valuable manure we ever had.

FROM MR. WM. SIM, DRUMMOND, SCOTLAND.

It gives me much pleasure to add my testimony to that of other farmers, of the value of the manure you inform me is called guano.

As far as this season has gone, it has the superiority over nitrate and bone dust. I applied ten bushels of bone dust, one cwt. of nitrate of soda, and 70lbs. of guano (being at the rate of two cwt. to the acre). Sown in ridges, it has produced more luxuriance than either.

From the experiments more lately made, it appears that the best mode of applying guano is to mix 2 cwt. with 4 or 5 bushels of bone *dust*, as the supply for one acre of Wheat, Barley, or Oats.

Mr. Smith, whose experiment is mentioned among the foregoing, and whose reputation as a farmer adds weight to any opinion he may express, states that he considers the effect of this mixture as far surpassing any other he has seen; but I would not dispense with the charcoal, from which the same benefit will be always derived.

There is an advantage in guano, that, use it in almost any way, its component parts are so essentially manures that they must be absorbed by the growing plants, and assist by adding vigour to their life; and if a farmer should prefer other means of applying it to his land than that which I have mentioned, he can scarcely go wrong in making trial of his plan.

I may add turnips to the crops benefited by bone dust and guano together; but for green crops in general, charcoal alone will be necessary to mix with it. The great assistance that can be given to manures of this description, is to diffuse them among the roots of the plants, and consequently as much as possible through the land they are applied to.

A. MACDONALD.

3, *St. Mildred's Court, London, Oct.* 26.

COMPARISON OF MANURES.

(FROM THE GARDENERS' CHRONICLE.)

Messrs. Boussingault and Payen have lately produced an elaborate memoir upon the comparative value of different kinds of manure. An abstract only of it has as yet reached us, the substance of which is as follows :—These chemists regard nitrogen as the element whose presence is of the greatest importance in manure, and every substance capable of furnishing it becomes valuable in an agricultural view, provided that substance can extricate azotised products in a soluble or volatizable state. If, however, the nitrogen is incapable of entering into putrid fermentation, and of so furnishing ammoniacal salts and other azotised combinations, the substance containing it can be of no use for manure; as it is proved by the shale of the coal measures, which contains considerable quantities of nitrogen, and yet has absolutely no effect as a manure. Hence the value of a manure is to be determined by the power it possesses of yielding ammonia; putrid urine, for instance, one of the most energetic of fertilizing principles, yields carbonate of ammonia; and guano, that rich compound which for centuries has given fertility to the arid sands of the Peruvian coast, consists almost entirely of salts with an ammoniacal base. The authors do not undervalue the importance of other substances, such as alkalies or earthy salts; on the contrary, they admit their presence to be indispensable to the growth of plants; nevertheless, it is to ammonia that they assign by far the most importance. The following table gives the result of their enquiry in respect to a considerable number of substances, and shows how many loads of each are required in order to produce the same effect as 100 loads of common farm yard dung. We have omitted from these tables a few substances which, not occuring in this country, have no interest for farmers and gardeners in Great Britain.

A TABLE OF MANURES,

Showing the number of loads required in both the moist (or ordinary) and dried (or prepared) states, to equal 100 loads of farm yard dung, so far as the quantity of nitrogen is concerned.

	Moist.	Dried.
Pea straw	22	100
Sainfoin straw	83	361
Vetch straw	39	174
Wheat straw	166	650
Do.	81	367
Do., lower joints	97	453
Do. upper joints, with the heads after thrashing	30	137
Rye straw	235	975
Do., of 1841	95	390
Oat straw	142	541
Barley straw	173	750
Wheat chaff	47	207
Jerusalem Artichoke straw	108	453
Broom	32	142
Green Beet leaves, (*fanes*)	80	43
Potato leaves	72	84
Carrot leaves	47	66
Heath leaves	22	102
Sea wrack	46	138
Do.	42	123
Do.	28	85
Do. fresh from the sea	74	
Malt dust	8	39
Buried Clover roots	24	110
Flax cake	7	32
Rape cake	8	35
Fish cake	74	322
Grease cake	11	49
Beet-root pulp	35	154
Do.	105	154
Potato pulp	76	100
Starch water		571
Do.		645
Starch refuse	111	107
Do.	24	
Dunghill drainings	67	126
Sawdust of Acacia	137	513
Do.	173	629
Do. of Fir wood	250	886
Do.	173	629
Sawdust of oak	74	256
Solid Cow dung	125	84
Cow urine	90	51
Mixed Cow Dung	97	75
Solid Horse Dung	72	88
Horse urine	15	15
Mixed Horse dung	54	64
Do. Pig dung	63	57
Do. Sheep dung	36	65
Do. Goat dung	18	49
Pigeon dung	4	21
Liquid Flemish manure	210	
Do.	181	
Belloni's Poudrette	10	44
Oyster shells	125	487
Marl	78	377
Dry muscular flesh	3	13
Cod, salted	5	17
Do., pressed and dried	2	10
Blood soluble	3	12
Do., liquid	13	
Do.	14	
Do., coagulated and pressed	8	11
Do., dry insoluble	2	11
Feathers	2	11
Cow's hair	2	12
Woollen rags	2	9
Horn raspings	2	12
Cockchafers	12	14
Bones, boiled (*fondus*)	5	25
Do., moist	7	
Do., fat	6	
Glue refuse	75	213
Glue dross (*mare de colle*)	10	34
Graves	3	15
Animal black of the manufacturers	37	95
Animalized black	36	98
Noir des camps (!)	32	65

IMPROVEMENT IN AGRICULTURAL IMPLEMENTS.—The Shropshire ploughs have long been considered extremely defective in their construction, requiring in general double the number of horses than the best ploughs in some counties are worked with; and with this enormous extra power doing the work in a slovenly and inefficient manner. This opinion is confirmed by experiments made on Wednesday, on the farm of W. H. Oatley, Esq., Wroxeter, by that gentleman and some agricultural friends. The Dynamometer, or Plough-gauge, as exhibited by Mr. Slaney at our late agricultural meeting, was first applied to a Shropshire iron plough, considered of light draught, and the test marked 22 stone, or two hundred and three quarters weight, as the moving force required. It was then attached to one with a wooden beam and iron shieldboard, and the gauge indicated three and a half hundred weight. The third plough was of iron, of heavier draught than the two previously tried; the index noting three hundred weight and three quarters. Two ploughs, furnished by Messrs. Young and Spence, were then tested; the one FF, the other NL. The Dynamometer gave the draught of the first at two hundred weight, and of the second two and one-eighth. Assuming that the draught of one horse should be taken at eight stone, or 112lb., the number of horses required for each plough will be as below:—

	FF	16 stone,	or 2	horses.
	NL	17 do.,	or 2⅛	do.
Shropshire	No. 1 Iron	22 stone,	or 2¾	do.
	No. 2 do.	30 do.	or 3¾	do.
	Wood......	28 do.	or 3½	do.

But as three-fourths of one-horse power cannot be distributed ;between two horses without injuring them, the No. 1 iron plough must be taken in practice at three horses, and the two last at four horses each; and these ploughs were certainly above the average quality of those generally used in this county. Two-fifths, if not one-half of the horses here employed in ploughing might be dispensed with, if more perfect implements were substituted.—*Shrewsbury Chronicle.*

TO AGRICULTURISTS.

SOME BRIEF OBSERVATIONS ON THE ROTATION OF CROPS, BY J. RUSSELL, AUTHOR OF PRACTICAL AND CHEMICAL AGRICULTURE; AND ALSO OF "THE IMPROVED SYSTEM OF AGRICULTURE."

The writer of this address has had a long and extensive experience in farming. At an early period of his practice, he was induced to make some experiments on his cultivation. Those experiments were wholly opposed to the systems advocated by the popular writers of the day on agriculture (namely, Arthur Young, Sir J. Sinclair, Marshall, and others.) Those experiments soon convinced the writer there was something radically wrong in their theory, and that landed proprietors and farmers in general were pursuing a bad system, both as regarded their own interest, and the improvement of the soil.

The vague idea of the land requiring rest, the writer was soon convinced was an erroneous one, and that to raise it to its greatest fertility and to render it more profitable, whether the farm had been reduced by mismanagement or naturally infertile, only required method and system in cropping; and that cattle and corn crops alternately would at some future time supersede the ancient custom of resting land by fallows, and laying it a few years in grass.

About twelve years ago the writer published a treatise on the above subject, entitled "Russell's Practical and Chemical Agriculture," copies of which soon came into the hands of scientific agriculturists. Some of them put the systems the writer had advocated into practice, and others only partially so; and on those farms where the system had been longest practised, the result has proved favourable beyond all expectation; more sheep and cattle are kept, more corn is grown, horse labour reduced, and the farms support their high state of fertility, and with less expense in procuring manure.

There are instances in this county (Warwickshire) where the stock that was formerly kept on the young grass pastures is now nearly all kept, both in winter and summer, on artificial crops. In one parish (Loxley) principally a dense glutinous clay, the quantity and value of the produce has been increased within the last twelve years three hundred per cent., and that principally and in some instances wholly from its own resources.

There are some light land farms that have been constantly in crop for seven or eight years, and though ten or eleven crops have been grown on the same land, from one ploughing only to each crop, those farms are the freest from couch and weeds of any others in the adjacent part of the county.

The writer considers the first and greatest improvement in farming, is thoroughly draining the land; the next branch of importance is the husbanding of the manure, or making the most of the best quality the farm and stock is able to produce. On those farms where these objects have been duly attended to, and the manure wholly applied to the forcing of cattle crops, the farms have been rapidly increasing in fertility.

It is often observed, and perhaps with great truth, that no system can be laid down suitable to all soils and situations, but on those farms where the alternate cropping and the above rules have been attended to, there has been no difficulty in finding one vegetable or other amongst our numerous tribe, that will thrive on every variety of soil, from the glutinous clay to the blowing sands. A rotation judiciously laid down avoids any confusion, it enables a man to look at the map of his farm and settle what crop each field shall grow in any future year.

It has been well said, that without cattle no manure, without manure no crops; the suggestion then naturally arises, first, is how to raise the food; and then to fix upon the best mode of consuming it, so as to improve the live stock, and at the same time secure the largest quantity, and also improve the quality of the manure. These questions are answered above, and as the writer observed in the body of his work, that he who grows plenty of Swede turnips and stores bountifully, is never at a fault for food for his stock at the most trying season; and he who grows plenty of vegetables and soils bountifully in his yards, is never at a fault for manure for his crops.

Kenilworth, July 13, 1841.

ON REMOVING LARGE EVERGREENS.—Autumn being the season that gardeners generally prefer for removing evergreens, I beg to offer the results of my own experience. Having several arbutus killed with the frost last winter in the most conspicuous parts of the garden, we waited till the latter end of April to see if they would recover; but finding they did not, my employer wished to have them replaced with some large handsome Portugal laurels, and after attempting, but in vain, to defer it till the autumn, I reluctantly complied with his wishes. In the first place, I caused the holes to be made very large, then put five or six barrow-loads of old hot-bed manure into each hole, after that some leaf-mould and sand, and then poured water into it till it was a complete puddle, so that when the ball of the plant was put into it, it sunk down and filled the sides all round. The surface of the ground was then levelled all round the plant, and the weather being very hot at the beginning of the summer, we gave them some water three or four times. They began to grow immediately, and they have made three times the progress that some we removed three years ago, in the month of October, have done. We transplanted evergreen oaks and hollies at the same time, with equal success, while evergreen oaks that were transplanted three years ago in October have never properly recovered. From this I am persuaded, that spring is the best time for removing large evergreens, as they begin to grow immediately, and get that support which the leaves require; whereas, when planted in the autumn, they are five or six months loose in the ground, without any support at all.—*Robert Towers, Gr. to P. Waterhouse, Esq., Aigburgh, near Liverpool.*

RURAL CHEMISTRY.

The principal vegetable substances which constitute plants are very similar in composition; they all consist of the same three or four elements, and only differ slightly in the relative proportions in which these elements are combined together; consequently, although sugar, gum, and starch are certainly very different substances, and not possibly to be mistaken for each other, yet it will be readily understood that they may easily be changed by very simple chemical operations into one another. Nothing can well be more distinct than wine and vinegar, and yet we know how very easily the one may be changed into the other by exposure to the air, under proper circumstances: this effect is merely produced by the absorption of oxygen from the air by the spirit contained in the wine; for the whole difference between spirit and vinegar is, that the latter contains rather more oxygen than the former. In the same manner it is easy, by increasing the quantity of carbon, or, what is the same thing, diminishing the quantity of oxygen and hydrogen, in lignin, to convert it into gum, or to convert gum or starch into sugar; and these changes, which we can readily effect artificially by chemical means, are constantly taking place naturally in the organs of plants.

The soil or earth is, as will be supposed, very variable in composition; its nature is always a good deal dependent on the subsoil and stony matters which are buried beneath the surface, many of which are slowly decomposing or crumbling away, and adding to the soil the substances of which they were composed. The constituents of soil may be divided into two classes—the inorganic and the organic. The inorganic are the earthy bases with their compounds, and silica, which together form the principal bulk of most soils; metallic oxides, of which the only ones of importance are the oxides of iron, and small quantities of various saline compounds of the alkalies and earths. The organic matters in the soil are chiefly derived from the decay of animal and vegetable substances; the latter consisting usually of the remains of vegetables which at a former time have grown on the soil, and which, under the influence of air and moisture, are slowly undergoing the kind of change before alluded to, and evolving carbonic acid, by the gradual combination of a portion of the carbon they contain with oxygen. The most abundant constituent of soils is commonly silica, which frequently forms nearly nine-tenths of the whole of its weight; but this is by no means always the case, for in calcareous or limestone countries we frequently find soils containing a very large quantity of lime, whilst others again contain a large proportion of alumine. These differences in the proportion of the earthy components of the soil give rise to the varieties of light or free, and stiff or clayey soils, which are also modified by the presence of a greater or less quantity of organic substances. Soils differ greatly in their mechanical as well as in their chemical nature, as the same substances constitute a soil possessing very different properties, according as they are in the form of little grains like sand, or in very fine powder. This state of mechanical division is of great importance for several reasons, and most particularly in relation to water. A soil containing a large quantity of alumine is generally known by its stiff, tenacious character, and is remarkable for its great retentive power for water; whilst those consisting principally of silica, and more especially those in which it exists in the form of sand, are generally light and porous soils, and far less retentive of water. The best soils are those in which the earthy constituents are so proportioned that the light, porous qualities of some are balanced by the close, retentive properties of the others, as they are then most uniformly suitable to vegetation.

The silica and alumine in soils are of course almost wholly free and uncombined with any acid, as the former is not a base, and the latter has hardly any affinity for the weaker acid, such as the carbonic; small quantities of silica are almost always found in soils combined with either soda or potash, forming those curious compounds before alluded to, in which the silica seems to play the part of an acid: soils never contain more than a very small quantity of these substances, but it is evident that those plants, like grass, which contain silica, must obtain it from the soil, by gradually absorbing it in combination with alkali dissolved in water. Lime and magnesia, which have both powerful affinity for acids, are never present in the soil except in combination with some acid, and this is most commonly the carbonic; the former is also not unfrequently found combined with sulphuric acid, constituting gypsum, or sulphate of lime. The oxides of iron in the soil are usually uncombined, as they have not sufficient attraction for carbonic acid to combine with that always present in the air. They in great measure occasion the variations of colour observed amongst soils; for according as the iron is in the state of protoxide, or peroxide, it gives to the soil a black or brownish-red colour. It must not be supposed, however, that the colour of soils is wholly dependent on the iron which they contain, or that the blackness of any particular soil is indicative of the presence of protoxide of iron, because the decomposing vegetable substances which all soils contain in greater or less quantity are usually of a brown or black colour, and therefore not unfrequently give a very dark colour to soil which does not contain any iron. Sulphate of iron is also sometimes present in soils in very small quantity, being formed by the gradual oxidation of sulphuret of iron in the manner previously mentioned; a very minute quantity of this salt of iron confers upon the soil peculiar properties which render it appropriate for particular plants, but a slight increase of the quantity of the salt in the soil is attended with very bad results, as, except in very minute quantity, it is poisonous to plants, and hence such soils are invariably barren or incapable of supporting healthy vegetation.

The saline matters in the soil are principally the sulphates, muriates, nitrates, and phosphates, of the alkaline and earthy bases. The nature and quantity of these substances vary considerably, but they never constitute more than a very small portion of the soil; their influence upon vegetation is, however, considerable, for certain plants seem to require particular saline substances, and do not grow well in soils not containing them. Thus all kinds of grass and corn contain silica and phosphoric acid; the former requires the presence of an alkali, either potash or soda, to render it soluble, and enable it to enter the roots dissolved in water; whilst the latter is also always associated with a base, which is usually either lime or magnesia, and in the same way all plants are found to contain small quantities of similar saline and earthy matters.

The nature and quantity of the organic substances in the soil have great influence upon its character and fertility; they act in several ways; by slowly decaying they present a constant source of carbonic acid, and if they contain nitrogen, likewise of ammonia; whilst, by rendering the soil open and porous, and at the same time increasing its absorbent powers, they assist in keeping it uniformly moist. They also increase the means which the soil possesses of absorbing and condensing ammonia and carbonic acid from the air. It is a remarkable fact, that a mixture of two or three earths, such as lime, silica, and alumina, is better fitted to absorb moisture and gaseous matter, than either of the earths taken singly; and in the same way, the addition of organic matters to the soil has the effect of increasing this power still further; and, therefore, as was before said, the best soils are those containing a quantity of each of the three earths, mixed with a moderate proportion of decaying organic matters. Some soils contain a very large quantity of organic substances, and indeed not unfrequently consist almost wholly of the remains of vegetables; the different varieties of peat are of this character, and in them we observe the bad effects of too great a quantity of organic matters in a soil, rendering it tough, very porous and spongy, so that it is soon saturated with water, or completely dried, by the changes of the weather; and besides all this, very frequently containing a peculiar acid substance, produced during the decay of vegetable matter, which is hurtful to the growth of plants. Another use of the organic constituents of the soil is, that they furnish to the plants growing on it the saline substances which they naturally contain, and which not being subject to decay, are gradually washed out by the rains during the decomposition of the organic substances, and are ready to be absorbed by the roots of the growing plants.

The decay of the vegetable remains in the soil never proceeds so far that the whole of the elements which they contain are converted into carbonic acid and water. The first change which they undergo, when exposed to air and moisture in circumstances favourable to decay, is a domination of the quantity of oxygen and hydrogen, and, likewise, though in smaller relative proportion, of the carbon which they contain. The result of this is a change of colour, somewhat similar to that produced by slightly burning or singeing them by heat; they become more or less brown, according to the degree to which this change has proceeded. Whilst in this state, they constitute what is called humus—the name by which chemists distinguish all kinds of vegetable matter when in a state of decay—and more especially woody fibre, which indeed usually constitutes a very large proportion of the bulk of plants. This process of decomposition proceeds slowly for a considerable time, the relative proportion of the oxygen and hydrogen to the carbon gradually decreasing, carbonic acid and water being all the time formed, until at last the humus ceases to undergo any further change, and then is termed mould by chemists.

In order to understand this process, which is one of very great importance in connection with the growth of plants, it must be remembered that woody fibre and most vegetable substances consist of carbon, oxygen, and hydrogen; and that though these three elements are united together in nearly the proportions to form carbon and water, we must nevertheless not for a moment suppose that they are composed of those two substances, but that they are distinct compounds of the three elements; and therefore, of course, that the water evolved during their decay is not merely set at liberty by a process of decomposition, but that it is formed by the hydrogen set at liberty during decay combining with oxygen.

When woody fibre and similar vegetable substances are exposed to air and moisture, they decay; the chemical affinity which binds their elements together seems to be weakened, and the elements acquire a tendency to form new combinations. The oxygen and a portion of the carbon unite together and constitute carbonic acid; whilst a portion of the hydrogen combining with oxygen from the air, gives rise to the formation of water. This explains the use of air in facilitating the decay of these substances; for it is evident that if free oxygen be required to combine with the hydrogen, this process cannot go on without a constant supply of fresh air. The rapidity of the decay of vegetable matters in the soil, therefore, depends greatly on the porosity or closeness of the soil, permitting a more or less perfect action of air. In soils containing a large proportion of clay or alumine, the decay of vegetable matter or humus proceeds very slowly, because the close, dense nature of the soil greatly retards the free access of air; though, in other respects, such soils are decidedly favourable to decay, inasmuch as they remain long moist, and a certain degree of moisture is essential to decay.

The decay of vegetable substances may be greatly increased in several ways: thus some of the forms of woody fibre, which have comparatively little tendency to decompose, may be put into a state of decay, by mixing them with a small quantity of some animal or other easily putrefiable substance, which, rapidly undergoing decomposition itself, greatly accelerates a similar change in the comparatively unchangeable substance with which it is mixed. We have a practical illustration of this in the case of common farm-yard manure, in which the decay of the woody fibre or lignin of the straw is very greatly assisted and accelerated by the animal substances which become mixed with it.

The presence of the free alkalies and the caustic earths, such as lime or magnesia, also greatly facilitates the decay of humus and similar organic substances; and, consequently, when these alkaline or earthy bases are mixed with the soil—or, what is the same thing, with the vegetable matters intended to be used as manures—they accelerate decay, and therefore increase the formation of carbonic acid, besides also acting usefully in other respects, such as improving the mechanical texture of the soil.

Animal substances are far more liable to undergo decomposition than vegetable matters, in consequence of the peculiar character of nitrogen, which, as previously stated, has a comparatively weak affinity for other elements, and accordingly has a constant tendency to escape from its combinations, and so cause their decomposition. Under these circumstances, however, the nitrogen is not given off in a free state; but whilst thus escaping from a compound in which it was combined with carbon, oxygen, and hydrogen, it almost always combines again with one of these three elements, and thus gives rise to the formation of ammonia, or nitric acid, according to the circumstances under which the change takes place. It is always observed that two substances, which have but a comparatively weak affinity for each other under ordinary conditions, and which are unable to combine together when mixed, have their power of combination very greatly increased when they are brought together at the moment when one or both are being evolved or expelled from a previous combination. Substances whilst thus being set at liberty are said to be in a nascent state, and are able to form combinations which under ordinary circumstances they would be totally unable to do. Thus we know that nitrogen and oxygen are constantly mixed together in the atmosphere, and yet they are unable to combine: but when nitrogen is in a nascent state, or whilst being evolved during the decay of animal substances, or other compounds containing it, under certain conditions combination is able to take place, and nitric acid is formed. This condition of substances is very important to be remembered, as it shows us that the substances evolved during decomposition are in a peculiar state, which renders them more capable of entering into new combinations with each other than they are under ordinary circumstances.

When animal substances are exposed to air and moisture, they rapidly undergo a change, and are, for the most part, converted into carbonic acid, ammonia, and water. The rapidity with which this change takes place depends greatly upon the access of air, and also upon the temperature or degree of heat to which the substances are exposed. When matters undergoing this change are mixed with alkaline or earthy bases, which have a strong affinity for acids, they form, during decomposition, nitric acid, in consequence of the union of the nitrogen with a quantity of oxygen.

Animal substances, like the vegetable matters in the soil, are of value in several ways: like them they affect the texture and absorptive qualities of the soil, though, from their great proneness to decay, their effects are more temporary. Their principal value consists in the nitrogen and earthy matters which they add to the soil, the former of which being combined either with hydrogen or oxygen, is in a state to be absorbed by plants, and able to enter into new combinations. The earthy substances contained in larger or smaller quantity by all animal matters, are, for the most part, those which, being derived principally from the vegetables on which the animals feed, are also those requisite for the growth of plants. Some of the animal substances added to the soil, contain a very large quantity of earthy matters; these are useful principally for the sake of their earthy constituents, and also as assisting in condensing and absorbing ammonia from the air; whilst other animal materials, such as the more perishable parts of dead animals, are chiefly useful for the ammonia or nitric acid which they evolve during decay. They are likewise, however, of service to the soil by facilitating the decay of vegetable matters, and thus assisting in their conversion into the substances capable of being absorbed by plants.

Whilst organic substances, and more especially animal matters, are decaying, they commonly emit a very offensive smell: now as neither water, carbonic acid, ammonia, nor nitric acid can cause this, it is evident that some other substance must, at the same time, be formed. The fact is, that the nauseous odour given off under these circumstances is occasioned by the formation of a small quantity of a peculiar gas, called sulphuretted hydrogen, composed of sulphur, or brimstone, and hydrogen, which, though hardly able to combine with each other under common circumstances, when brought together unite readily when the hydrogen is in that peculiarly nascent state above adverted to. Thus when organic substances, containing small quantities of sulphates, decay, a portion of the hydrogen, whilst set at liberty, combines with some of the sulphur contained in the sulphates, and sulphuretted hydrogen gas is formed. This gas not only has an exceedingly offensive smell, but is also very poisonous, and would probably occasion many accidents, were it not that its strong and very disagreeable odour soon warns us of its presence, and obliges us to adopt measures to disperse it by ventilation, or other means. This gas is evolved in considerable quantity during the decay of eggs, and likewise during the decomposition of nearly all animal substances; though its odour is not unfrequently almost overpowered by the strong pungent smell of the ammonia evolved at the same time. Whilst such decaying substances are exposed to the air, the sulphuretted hydrogen gas thus formed is dissipated, and carried away in the atmosphere; but at the same time a large quantity of the ammonia also formed is lost, and this is of course highly objectionable; for the value of these kinds of manure depends mainly upon the quantity of nitrogen which they are able to supply to the plants, and everything tending to assist in retaining that substance in the soil, and rendering it available to the growth of plants, is advantageous; whilst, on the other hand, everything increasing its loss or dissipation in the air, lessens the value of the manure, and renders its application of less service.

The quantity of decaying animal matter in the soil is likewise of very great importance, for too great a proportion seriously injures many plants. It must always be remembered, that although ammonia and carbonic acid are the principal food of plants, there is a limit to the quantity of these substances they can absorb; and that too great a supply of them is not only useless, but even objectionable, as it is highly injurious to the plants. —*Gardeners' Chronicle.*

MR. CURTLER'S DRILL.—We held out the promise in our last of laying before our agricultural readers some descriptive particulars of the seed and artificial manure drill manufactured by Messrs. White and Leith, of Worksop, in Nottinghamshire, for T. G. Curtler, Esq., of Bevere, and sent to the agricultural show on Friday by that gentleman, where, as we stated, it attracted much attention. We are now enabled to fulfil this promise through the kindness of Mr. Curtler, who, immediately upon our application to him, placed in our possession the following copy of his letter to the manufacturers ordering the drill, and suggesting the plan and principle of its construction:—

"Bevere House, Worcester, July 19, 1841.

"GENTLEMEN,—I saw and admired your drills at the Liverpool meeting, but unfortunately I was obliged to leave without seeing you again, as I had intended. Your drill for sowing one row of turnips and tillage, on ridges, I fully inspected, and liked it. It has occurred to me as very probable that one drill, to be used by one horse, and to be converted to all purposes, may be made by you. Suppose the drill was made for four rows of corn, turnips, rapeseed, &c., &c., to be used on the level surface, with tillage, so that the width of the rows might be contracted or expanded to suit one or other. I imagine that two sets of the spouts and coulters could be taken up, so that two could be used for two ridges of turnips, mangel wurzel, &c., &c. In this case one drill might be used with one horse for all purposes. I am confining myself entirely to the principle of the drill shewn at Liverpool for one row of turnips on the ridge, but adapting that principle to corn, &c., on the flat surface, so as to make it suit for ridges also with one horse; and wish to know if there would be any difficulty about it, and especially as to regulating the quantity of seed and tillage per acre, in the same manner as is performed by the one row tillage drill: this I consider of great importance. have not seen any good drill in this county for seed and tillage, and I should like to introduce some such a one as I have endeavoured to describe, and perhaps you will be good enough to offer me your opinion and suggestions; also say the price and any observations that may occur to you.—I am, gentlemen, yours obediently,

"T. G. CURTLER.

"Messrs. White and Leith, Worksop."

[We should mention here that "tillage" is the phrase used in Nottinghamshire, and we believe the north generally, for artificial manures.]

We have further only to add that the drill in question is that furnished by Messrs. White and Leith, in conformity to the instruction and hints thus supplied to them by Mr. Curtler; that repeated trials have been made of it, and that it has been found most effectually to answer its intended purpose. The cost is 18*l.* 18s. at the manufacturer's; the charge for conveyance to Bevere was 2*l.* 2s.—*Herald.*

SHEEP.

(EXTRACT FROM THE PENNY CYCLOPÆDIA.)

There is much more similarity between the varieties of the long-woolled sheep than those of shorter fibre. The deficiency of horns, the form of the head, the expression of the countenance, and the white faces and legs, show that they sprung from one common stock; while the colour and weight and uses of the wool speak their common origin.

The following description of the *New Leicester*, by Mr. Calley, will, to a very considerable degree, serve for all the varieties of the long-woolled sheep. The head should be hornless, long, small, tapering towards the muzzle, and projecting horizontally forwards. The eyes prominent, but with a quiet expression. The ears thin, rather long, and directed backwards; the neck full and broad at its base, but gradually tapering towards the head, and particularly fine at the junction of the head and neck. The neck seeming to project straight from the chest, so that there is, with the slightest possible deviation, one continued horizontal line from the rump to the poll. The breast broad and full; the shoulders also broad and round, and no uneven or angular formation where the shoulders join either the neck or the back, particularly no rising of the withers, or hollow behind the situation of those bones. The arm fleshy through its whole extent, and even down to the knee. The bones of the leg small, standing wide apart, no looseness of the skin about them, and comparatively bare of wool. The chest and barrel are at once deep and round in the ribs, forming a considerable arch from the spine, so as in some cases, and especially when the animal is in good condition, to make the apparent width of the chest even greater than the depth. The barrel ribbed well home. No irregularities of line on the back or the belly; but on the sides the carcass very gradually diminishing in width towards the rump. The quarters long and full, and as wide as the fore legs. The muscles extending down to the back, the thighs also wide and full. The legs of a moderate length; the pelt also moderately thin, but soft and elastic, and covered with a good quantity of white wool, not so long as in some breeds, but considerably finer.

Such is the Leicester sheep as Bakewell made him. He found him as different an animal as it was possible to conceive—flat-sided, large-boned, coarse-woolled, slow to fatten, and his flesh of little value. Were there room for its insertion, a detailed history of the different steps of the changes would be most interesting to the reader. The means were simple, and the effect was almost magical. The principle was, that 'like produces like;' and therefore he selected a few sheep with aptitude to fatten, with a disposition to produce an unusual quantity of valuable meat, with little bone and offal, and with quietness of temper; and from these he exclusively bred. He cared not about near or distant affinities, but his object was to increase every good point, and gradually to get rid of every bad one. They were not different sorts of sheep that he selected, but the best of the breed to which he had been accustomed.

His sheep were smaller than those of his neighbours, but they retained every good point, and had got rid only of the bad ones. The alteration was rapid as well as great in his own flock, and the practice which he introduced, of *letting* some of his rams, quickly extended the benefit of his system far and wide. The first ram which he let was in the year 1760, at 15s. 6d. for the season. In 1789 he let one ram for 1,000 guineas, and he cleared more than 6,000 guineas in the same year by the letting of others. After that, so great was the mania, or rather the desire of improvement, that Mr. Lawrence calculates that 100,000*l.* were annually spent by the midland farmers in the hiring of rams.

Such was the origin and the eventual triumph of the new Leicester breed of sheep. They have spread themselves to every part of the United Kingdom. There are few others of the long-woolled sheep which do not owe much of their excellence to the new Leicesters, and even some of the short-woolled flocks are deeply indebted to the breed introduced by Bakewell. There is no other species of sheep that possesses so decided a propensity to fatten, or that is prepared for the butcher at so early an age. It will not, however, thrive on a poor soil, nor if it is compelled to travel far in order to procure its food; but on soils of a moderate quality, there is no other sheep so profitable. Other breeds may be superior in size, but it is at an expence of time and of food, and eventually a palpable deterioration of flesh and diminution of profit. The new Leicesters on fair keep will yield a greater quantity of meat, for the same quantity of food, than any other breed of sheep. The meat is of a peculiar character. It is disliked by some on account of a supposed insipidness. The fatty matter is too much introduced between the muscular fibres, and there may be the appearance and the taste of a mass of luscious fat. This, however, is the fault of the breeder, and not of the animal; it marks the point to which the fattening process should be carried, and where it should stop. It is the fault of the grazier if he converts that which is an excellence into a fault.

The deficiency of the fleece was formerly objected to the new Leicester sheep. The truth of the matter was that, with the early breeders, the fleece was a perfectly secondary consideration, and comparatively disregarded. There is now little cause for complaint on this head.

WINTER BUTTER.

Of all the products of the dairy, there is none more extensively used than butter; and there is none the preparation of which requires more care, or better repays a little extra attention. The difference between good and bad butter is as wide as between the zenith and the nadir; and there is nothing more advantageous to the dairywoman, or more to be coveted by her than a high reputation for the quality of this article. Good butter always indicates good order, great neatness, personal supervision, domestic industry, and skill in housewifery; and when a man carries an inferior article to market, the opinion entertained of his wife is directly the reverse of this.

The first thing to be attended to in making sweet butter, and butter that will keep, is the perfect purity of everything used in the manufacture. Not only the vessels used, the pails, pans, churns, &c. but the room in which the milk is set, and the air which circulates in it, while the cream is rising, should be clean and free from every offensive odour whatever.

The temperature also of the milk while rising, and of the cream while churning, is of much moment. Cream on the milk will be injured or melted by too high a temperature, as well as while the churning process is going on: and if the temperature is too low, the cream rises so slowly that it becomes bitter, and the butter of course is unpalatable. A temperature of from 50° to 60° has been thought the best for the milk room, and from 60° to 65° will make good butter. The churning after it commences, should proceed without intermission until the butter is formed, and separated from the milk as far as it can be in this stage of the process.

The salting of the butter is a matter essential to its good quality. Too frequently, salt of a coarse inferior description is used; and so much is put in that it remains undissolved, gritting like sand in the teeth, and provoking uncomfortable thirst. The salt for butter should be of the purest kind, made as fine as it can be by grinding, and if a little powdered saltpetre is mixed with it, it will be none the worse. Some have recommended five pounds of good salt, eight ounces of saltpetre and one pound of first-rate loaf sugar, thoroughly incorporated and used for salting, at the rate of one ounce and a half to the pound of butter. If the salt is of the right kind, and the butter is correct in other respects, it may be questioned whether the addition of any foreign ingredient is not to be deprecated.

The great point in making good butter, and that which will keep, is the freeing of it from all buttermilk; and if everything else is well done, if this point is overlooked, good butter is impossible for any length of time. The mixture of milk in any degree with the butter is sure to produce frowiness or an unpleasant taste to the butter; and the entire freedom from this, constitutes the grand secret of making good butter. There are many who think washing butter with water incompatible with retaining the rich flavour, but if the water is cold and pure, it is scarcely possible anything should be washed away, the buttermilk which destroys the flavour of all butter excepted. Besides, the best butter in the world and that which in all markets commands the best price, viz., Dutch butter, is invariably made in this way; and where the example has been followed by others, it has rarely failed of success. If any, however, doubt the propriety of washing butter, they may use any method they choose, provided the milk is separated perfectly. Perfectly freed from the substance that causes it to assume the putrid frowy taste of bad butter, it may be kept with almost as much ease as tallow; and solidity in packing, clean, sweet vessels, and a low temperature, will ensure its keeping for any reasonable time. Let no one expect good butter, however, so long as coarse impure salt is used, or a particle of the buttermilk is allowed to remain in it.—*Albany Cultivator.*

OF THE SUPPLY OF NITRIC ACID TO PLANTS.

(FROM PROFESSOR JOHNSTON'S LECTURES.)

In regard to the action of nitric acid upon vegetation, it is known—

1°. That when, in the form of nitrates of soda, potash, &c., it is spread upon the soil, it greatly promotes the growth and luxuriance of the crop, and increases its produce; and

2°. That, when other circumstances are favourable to vegetation—as in certain districts in India—the presence of an appreciable quantity of these nitrates adds largely to the fertility of the soil.*

The same effects are unquestionably produced by the addition of ammonia or by its natural presence in the soil. The beneficial influence of both compounds, then, being recognised, the relative extent to which each operates upon the general vegetation of the globe will be mainly determined by the circumstances and the quantity in which they respectively exist or are reproduced.

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* For the following, and other interesting notices, regarding Indian agriculture, I am indebted to Mr. Fleming, of Barochan, in Renfrewshire, whose long residence in the districts to which he alludes, as well as the interest he takes in practical agriculture, renders his testimony very valuable:—

"The districts of Chaprah, Tirhoot, and Shahabad, near Patna, where a large proportion of the saltpetre sent from Bengal is produced, are considered the most fertile in Bengal, producing two and sometimes three crops yearly. The natives of these districts, particularly a caste called Quirees (hereditary gardeners), who cultivate the best land, and produce the best crops, are in the habit of irrigating their fields with water from wells so strongly impregnated with saltpetre and other salts as to be quite brackish, and they consider onions, turnips, and peas, most benefited by this irrigation. Grain crops also grow most luxuriantly on lands yielding saltpetre, where there is enough of rain within a week or two after the seed is sown, but if a drought follows the sowing, and continues for three weeks or a month, the leaf becomes yellow, and the crop fails.

"The Hindoos do not generally manure their lands, as the dung of the cattle is used for fuel, but the Quirees collect the ashes of cow dung and of burned wood, and use it as a manure in some cases, chiefly for the poppy plant.

"The Hindoos have for ages been well acquainted with the rotation of crops, and the advantages of fallowing land,—although a great proportion of the land is almost constantly in rice, Indian corn, or millet, during the rainy season, and in wheat or peas during the dry season."

In regard to the existence of nitric acid, it is not known to form a necessary constituent of any of the solid rocks of which the crust of the globe is composed, but it is diffused almost universally through the soil which overspreads the surface. In the hotter regions of the earth,—in India, in Africa, and in South America,—it in many places accumulates in sufficient quantity to form incrustations of considerable thickness over very large areas, and in many more it can be separated by washing the soil. Even in the climates of Northern Europe, it is rarely absent from the water of artificial wells, into which the rains, after filtering through the surface, are permitted to make their way.[*]

On the whole, nitric acid and its compounds appear to *exist*, ready formed in nature, in larger quantity than either ammonia or any of its compounds.

Of these nitrates, as they do of ammonia, the rivers must be continually bearing a portion to the sea, but there are in nature unceasing processes of reproduction, by which not only this waste of the nitrates is repaired, but that further waste also, which is caused by their absorption into the roots and subsequent decomposition in the interior of plants. Let us shortly consider these processes of reproduction.

1°. When a succession of electric sparks is passed through common air, nitric acid ($N O_5$) is slowly but sensibly formed. The currents of electricity which in nature traverse the atmosphere must produce the same effect, and the passage of each flash of lightning through the air must be attended by the formation of some portion of this acid.

After a thunder-storm, plants appear wonderfully refreshed; in thundery weather they grow most luxuriantly, and other things being equal, those seasons in which there is much thunder are observed to be most fruitful. Some have ascribed these results to the *immediate* agency of electricity on the growth of plants.[†] Is it not equally possible that they may be connected with this necessary production of nitric acid?

In the rain which fell during seventeen thunder storms, Liebig found nitric acid always present and generally in combination with lime and ammonia. In the rain which fell on sixty other occasions, he could detect it only twice. In minute quantity nitric acid is difficult to detect. How much, then, must be formed in a thunder storm, even in our climate, to make the presence of this acid *always* appreciable in the rain that falls—how vast a quantity in those warmer climates where such storms are so frequent and so appalling!

2°. When a mixture of ammonia with oxygen gas is exploded by passing an electric spark through it, a quantity of nitric acid is formed, even when the oxygen is not sufficient to oxidize the whole of the ammonia[‡] (Bischof). Hence, if in the air, as we have seen reason to believe, the ammonia given off from decaying animal matters, and from other sources, be decomposed by the atmospheric electricity, there will necessarily be formed at the same instant a portion of nitric acid, at the expense of the nitrogen of the ammonia itself. This nitric acid will, as necessarily, combine with some of the ammonia which still remains in the air. Hence the existence and production of *nitrate of ammonia* in the atmosphere, and the consequent presence of this acid along with ammonia in rain water.

Thus the very cause which in the preceding section was shown to operate in constantly diminishing the amount of ammonia in the air, and the operation of which certainly renders improbable the existence of this compound in the atmosphere in the large quantity supposed by some[*]—this same cause is at the same moment constantly reproducing nitric acid. And, though much of what is thus produced must necessarily, as in the case of ammonia, be carried down to the sea by the rains, or be directly absorbed by the waters of the ocean themselves, yet it is obvious that in whatever proportion we may suppose the ammonia of the air to reach the leaves and roots of plants, in no less proportion must the nitric acid, with which it is associated, be enabled to enter into the circulating system of the various tribes of living vegetables, that flourish on every quarter of the globe.

3°. Again we have seen that, during the decay of vegetable substances in moist air, ammonia is formed at the expense of the hydrogen of the water, and of the nitrogen of the air. In consequence of, or in connection with such decay, nitric acid is also largely produced in nature.

The most familiar, as well as the most instructive, examples of this formation of nitric acid is in the artificial nitre-beds of France and the North of Europe. These are formed by mixing earth of different kinds with stable manure or other animal and vegetable matters, and exposing the mixture to the air in long ridges or conical heaps, which are occasionally watered with liquid manure, and turned over to expose fresh portions to the air. After a time, perhaps once a year, the whole is washed, when the water which comes off is found to contain a variable quantity of the nitrates of potash, soda, lime, and magnesia, which are employed for the manufacture of saltpetre. In these nitre-beds it has been observed that the production of nitric acid either does not take place at all, or only with extreme slowness, unless animal and vegetable matter be present in considerable proportion. And yet the quantity of nitric acid which is formed is much greater than could be produced by the oxidation of the whole of the nitrogen contained in the organic matters present in the mixture.[†] It is also observed that the nitre-beds are more productive when a portion from one outer face of the heap is lixiviated from time to time, and the washed earth added to the other side, than when the whole is lixiviated at once, and again formed into a heap and exposed to the air.

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[*] It occurs in the wells of the neighbourhood of Berlin (Mitscherlich), in the form of nitrates of potash, lime, and magnesia, in the wells round Stockholm, and may be expected in all wells that are dug (Berzelius).—*Traité de Chemie* iv., p. 71.

[†] Sprengel, *Chemie I. p.* 99.

[‡] It was shown above, that one of ammonia $N H_3$ requires three of oxygen to decompose it, forming 3 of water, and setting the nitrogen free. But, in reality, as Bischof has shown, the nitrogen is not wholly set free, but a portion both of its hydrogen and nitrogen combine with oxygen (are oxidized) at the same instant, forming simultaneously both water ($H O$), and nitric acid ($N O_5$).

[*] See especially Liebig's *Organic Chemistry applied to Agriculture*, p. 74.

[†] Dumas, *Traité de Chemie II.*, p. 725. He adds, that 100lbs. of nitre contain the nitrogen of 75lbs. of ordinary animal matter, supposed in a dry state, or of 300 or 400lbs. in its ordinary state of moisture,—a much greater relative proportion of animal matter than is ever added to the heap.

It appears, therefore, that organic matters are in our climate necessary to cause the formation of nitric acid to *commence*, but that after it has begun it will proceed in the same heap for an indefinite period, and at the expense apparently of the *nitrogen of the air only*.

Compost heaps are in general only artificial nitre-beds—often unskilfully prepared and badly managed—producing, however, a certain quantity of nitrates to the presence of which their effect on vegetation may not unfrequently be ascribed. To this fact we shall hereafter recur.

The soils, in the plains of India, and in other similar spots in the tropical regions, may be regarded as *natural* nitre-beds, in which, the decay of organic matter being vastly more rapid than in our temperate regions, the production of nitric acid is rapid in proportion.*

4°. But in many localities in which the presence of organic matter is not to be recognised in sensible quantity, the production of this acid is observed to proceed with a constant and steady pace. Thus, from the walls of certain caves in Ceylon a layer is yearly pared off, which yields an abundant crop of saltpetre (Dr. John Davy). The celebrated Mammoth cave in Kentucky, situated in a limestone ridge, yields an inexhaustible supply of nitrate of lime. During the war with Great Britain, fifty men were constantly employed in lixiviating the earth of this cave, and in about three years the washed earth is said to become as strongly impregnated as at first. Through the cave a strong current of air is continually rushing, inwards in winter and outwards during the summer months. On the plaster of old walls, especially in damp situations, an efflorescence of this and other nitrates is frequently observed over every part of Europe. In China, according to Davis, the old plaster of the houses is so much esteemed as a manure, that parties will often purchase it at the expense of a coating of new plaster. Old clay walls, and especially the walls of clay-built huts, are said to be very fertilizing to the land, when applied as a top-dressing; and in some parts of England, where the land is poor, the people are said to pile up the soil in the form of walls, in order to improve its quality. These latter facts seem to indicate that both in China and in England nitric acid is produced in similar circumstances, and that to its production the fertilizing action of the old plaster, and of the *weathered* clay, is alike to be attributed.

In the cultivated soil also, this acid is formed in ordinary circumstances. Braconnot found nitrate of potash in the botanic garden at Nancy, in a portion of soil in which poppies *(papaver somniferum)* had grown luxuriantly for ten years in succession—in larger quantity in the soil surrounding the interlaced roots of an *esclepias incarnata*, growing in an ordinary flower-pot, with a hole in the bottom—as well as in moss-earth, in which a plant of *euphobia breoni* had been grown in a pot.* There is little reason to doubt, indeed, that nitrates are to be found, in greater or less quantity, in all cultivated soils.

I shall not enter into a detailed enquiry how this nitric acid is formed. It is probable that as in the atmosphere ammonia may be decomposed and give rise to the formation of nitric acid, so in the soil this acid may result from a similar decomposition, proceeding more slowly, but according to the same natural laws. In warm climates, indeed, it appears certain that the ammonia which is evolved or formed during the decay of animal and vegetable substances, does speedily, and to a great extent, undergo oxidation,† and thus give rise to the greater abundance of nitric acid with which the tropical soils abound.

Thus, in the economy of nature, much ammonia is decomposed in the soil also, and hence another cause for the constant diminution of the quantity of this compound—in addition to those already detailed in the preceding section.

But, besides the portion of this nitric acid which owes its existence to the decomposition of ammonia, much—by far the greatest portion, in all probability—derives its origin from the union of the elements of the atmosphere itself. This direct union is effected in the *air*, as has been already shown, by the agency of atmospheric electricity; but it also takes place in the *soil* during the oxidation of the other elements contained in the organic matters which are there undergoing decay. The combination of the elements of ammonia in such circumstances proceeds on the principle—that bodies, themselves undergoing oxidation, *dispose* other substances in contact with them (in this instance the nitrogen of the air), to unite with oxygen also. The presence of lime, potash, &c., in the soil, further induces to this oxidation, by the tendency of these substances to combine with the acid, which is formed by this union of the elements of which nitric acid consists.

It is impossible precisely to estimate the quantity of nitric acid produced in these various ways, through these various agents, and in these varied circumstances; or to balance it *accurately* against the amount of ammonia continually reproduced, as we have seen, in nature, wherever the necessary conditions present themselves. But, as I formerly concluded, that the amount of nitric acid actually existing in the superficial deposits of our globe is greater than that of ammonia, so I think that, in regard to the reproduction also of these two compounds, the balance is in favour of the former.

Since, then, nitric acid is fitted by the solubility of its compounds to enter into the circulation of plants in any quantity—since, when applied to them, it does undoubtedly promote, in a remarkable degree, the growth of plants—and since, in nature, it is continually reproduced in every country, and under such varied circumstances—I cannot withhold myself from the conclusion, that, over the general vegetation of the globe, it holds

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* We are as yet too little acquainted with the natural history of the district of Arica in South America, in which, as already stated, the nitrate of soda has been accumulated in such large quantity, to be able to say to what *special* cause the accumulation is due. But as, from the description of Mr. Darwin, the locality appears to have been the site of an ancient lake, it is not unlikely that the nitrate may have been derived from the successive washings of a soil similar to that of India, by rains or periodical floods which for a long period emptied themselves into or fed the lake.

* *An. de Chim. et de Phys.*, lxxii., pp. 33 to 35.

† For the perfect oxidation of 1 of ammonia, no less than 8 of oxygen are required. Thus—

$$\underset{\text{1 of Ammonia.}}{NH_3} + 8O = \underset{\text{1 of Nitric Acid.}}{NO_5} + \underset{\text{3 of Water.}}{3HO}$$

with ammonia at least an equal sway, and is appointed to exercise at least an equal influence over the growth of plants, both in their natural and in their cultivated state.

Still the influence of each is not unvaried by locality or by climate. The extent of dominion exercised by the nitrates probably diminishes as we recede from the equator, while that of ammonia increases—it may be in an equal proportion.

ON THE UNILATERAL OR THREE-QUARTERED SHOE.

BY E. GABRIEL, ESQ., M.R.C.S. ET V.S., LONDON.

(From the Veterinarian.)

The most valuable improvement that has been made in the art of shoeing in modern times is most undoubtedly that of unilateral nailing introduced by James Turner. The principle of the thing is good, the practice is good, and, as a matter of course, the result is most valuable. The principle, however, has not yet been carried out to its full extent, and the object of this paper is to shew the great desirability that it should be, the great facility with which it can be done, and the important advantages to be derived therefrom.

I often have been, and I am by no means sure that I am not at this moment, doubtful whether it is of any consequence at all as to the manner in which horses are shod. I have seen every contradiction of principle so elaborately worked out, every means which human stupidity could adopt to lame animals so sedulously adopted, every care so magnanimously disregarded, and every carelessness of detail and unfinished coarseness of workmanship so recklessly acted on, and all this too backed up by the horses themselves, as shewn by their working soundly during the entire periods of their existence, that I could with all my heart sit down and exclaim, in the style of old Bardolph, "A fig for your improvements."

In sober seriousness, however, the fact is so, both, be it remembered, in town and country; and I am perfectly satisfied that two-thirds of the horses now in work are shod with the most utter disregard to principle and indifference to workmanship that the veriest anti-diffusionist of knowledge could desire. True, there are plenty of cripples, rather a strong minority perhaps, as they would say in the house; but still they are a minority, and when we come to deduct from them, as I strongly suspect we must do, the considerable number operated on by "careful smiths, on the most approved principles," at veterinary establishments, guiltless of the presence of veterinary surgeons and "veterinary forges," the owners of which, eschewing the superfluity of letters, and scorning to be of the accommodating humour in Bombastes, "long cut or short cut, 'tis all the same to me," decidedly prefer short cut, as I noticed a few weeks ago splendidly emblazoned in front of a forge in town; but then over the entrances hung golden shoes so tempting that if horses were not taken there to be shod I much doubt if they would not go themselves—why this deduction may, like some other tails, very probably turn tail, and prove ultra-innovationists, strengthen the argument against the improved systems, and have the rough unwashed (and any of the washed?) to laugh at the fallibility of human improvements.

How is all this? I apprehend it is to be traced to one of these two causes: first, the principle, when correct, has not been sufficiently carried out; or, secondly, it has been attempted to be carried out by methods not within the compass of the generality of working smiths. I believe many plans have been brought before the public, the which, if their projectors could personally carry them into practice, would prove advantageous, but which require too much care and skill to be carried out by his workmen; and this is a fact that should always be borne in mind, for we have no right to expect the skill which distinguishes the workers in gold and the workers in silver in the artificers employed in our forges: simplicity of detail is therefore an essential ingredient in any plan we may offer to improve the system of shoeing, and this is eminently the case with the unilateral method of nailing—any workman can carry it out, and therefore the public have been benefited by it.

Valuable as this method is, however, it has not produced all the good which the principle on which it is founded is capable of producing; and this I attribute to the first cause mentioned, namely, that principle not being fully carried out. I have now for some time gone one step farther. Instead of unilaterally nailing the common shoe, I use an unilateral shoe—precisely so far as the nails were carried round the inside quarter, so far I carry the shoe, letting it there terminate in a rounded bevelled edge.

Now, I am not going to smother this extra step of mine in my own modesty, and bashfully disclaim, either for it or myself, any merit that may be due, but declare at once that I think it a most important step—one that will overtake and conquer all corns, thrushes, sandcracks, contractions, and navicular—no, I am not sure about navicular cases, and yet I have a good mind to throw them in, particularly if they are not so far advanced that no one step short of a seven-leagued boot can overtake them. As a remedy for cutting, the value of the three-quarter shoe has long been known; and I believe that in every case where the opposite plan of thickening the inside hoof fails, this will succeed. For hunting, I anticipate the most important results: from its superior safety, its lessened chance of coming off, its prevention of slipping, and the ease with which the foot can be raised from ploughed or heavy ground, will, I doubt not, ensure its universal adoption. This however remains to be tried. I do really think, therefore, that it is the *ne plus ultra*, the acme of perfection in the art and mystery of horse-shoeing.

As to the originality of this step in the march of improvement, I am afraid that the less said the better; for I have a sort of undefined dread hovering over me of having seen something about it somewhere; however, I shall not try to see it, nor shall I refer to James Turner's paper, nor any body else's paper, fearing I may there read something like my own ideas. I therefore at once acknowledge that I do not recollect, nor will I try to recollect, any thing that any body has said, sung or written on the subject, and so I shall "leave myself alone in my glory."

The only "untoward events" I have met with are, being obliged to give it up in two cases, and have recourse to felt shoes and leathers, and in meeting with an anticipation, which happened thus: I had occasion to wait some little time at a coachmaker's in Stoke Newington, while a false step was being replaced to my chaise, when a respectable old man, a retired smith, came into the yard—a *retired* shoeing smith remember. Of course we had a little professional chat. I asked him if he did not use to doctor a little as well as shoe? "No," he replied, "I know nothing about it, and never pretended to it, for I had as much work as I could do without it." He was no theorist therefore; for what theorist ever made a fortune in this world, however clever he might be? He may, indeed, have laid the foundation for another man's fortune, but as to making his own—bah! Well, in the fulness of my heart, I could not help telling him of my important step. "Yes, sir," was his reply; "it is a very good one, and particularly for *flat feet*; it gets the heels up so strong. It is now about twelve years ago that I recommended a gentleman, whose horse had large flat feet, and was always going lame, to have him shod with three-quarter shoes; he agreed to it, and I shod him so up to the time of my giving up business, and he never went lame after." I'll be hanged if I knew whether to laugh or cry, to be pleased or vexed with this desperate forestaller, who had not only taken the step I was taking, but had taken it with such a desperate stride, that he walked into cases I never thought of; so that, if there were no written documents to refer to, I was at once convicted of non-originality, or as a sailor would say, of "catching a crab."

It is now more than a twelvemonth since I commenced this mode of shoeing. The first subject was a light post mare, with two of the worst corns I ever saw. She had been shod with bar shoes and leathers the preceding two years, and, in spite of every care that could be taken, was almost constantly lame. I at once left off the bar shoes and leathers, and put on a pair of unilateral shoes, paring the parts of the feet to be covered by the shoe, but leaving the inside quarter untouched. The shoes and nails were precisely the same as would have been else used with the inside thirds cut off and the ends rounded and bevelled away. She never went lame from the day she was so shod, to the day of her death, which was occasioned by an accident nine months after. "On this hint I worked," and with the exception of the two cases before alluded to where the heels were weak and the soles thin, but which I am persuaded would have done with a little more time, I have not met with a single annoyance. Posters, stagers, carters, hacks, and chaise horses have been subjected to the same process since, and all with uniform success.

Oh, but the crust will break away, the heel will be worn thin, the foot will become tender, and the horse will be lame. Will he? If you want to see a brittled-crusted, thin-heeled, thrushy-frogged foot converted into one with a tough, elastic crust, a firm springy heel, and a frog like a piece of India-rubber, shoe with the three-quarter shoe, and I will answer for the transformation. The growth of horn on the exposed part of the foot is extraordinary, for, in the course of a single shoeing the sole will not only not be worn thin, but have become so thick and firm, that more horn might be removed therefrom, than from that part of the foot protected by the shoe. I merely, however, leave it level with the crust. The outside heel should be kept rather low, to allow for the thickness of the shoe, and the heels opened or not, as may be considered most desirable. In old horses I have them well opened, but in young ones I allow them to remain undisturbed: in either case the paring of the frog should be limited to its being cleared from "shreds and patches." I am not aware that there are any other directions necessary, nor are any precautions required, with the exception, perhaps, of avoiding, as much as may be, the McAdamized stones for a day or two on its first adoption. One circumstance should not be overlooked: in several cases bad corns in the inside heel have been entirely got rid of; but they have been produced on the outside heel, so much so, as to require some care in preparing that part of the foot.

In point of principle—so far as relates to the natural functions of the foot, which natural functions I presume every one understands, or, at any rate, every one pretends to understand, which, doubtless answers the same purpose—this shoe is most valuable; for whether the most important object be frog-pressure, descent of the sole, expansion of the quarters, or unfettered play for the cartilages—whether it be the one or the other of these, as some assert, or their combined action, as others more rationally maintain, no shoe that has ever been had recourse to admits of their being carried on with such entire freedom as this. Every other shoe, however well applied, encircles the bottom of the foot, subjects it to one uniform artificial pressure—bearing always exactly on the same surface—applied equally to the most elastic and to the more fixed points of support—not allowing one part to catch the weight at one time and another at the other—not relieving the highly elastic inside quarter from pressure for, perhaps, some steps following, and then, when receiving it, admitting of its action with unlimited freedom—bruising, irritating, and, in many cases, entirely altering the structure of the sole at the inner angle of the foot. Every shoe, I repeat, that has ever been used, is liable to all these objections, except the three-quarter one, which having the inner third of the foot perfectly free, and still affording it sufficient protection to enable it to meet all demands made on it, effects "a consummation devoutly to be wished."

In conclusion, I would say, that I think this system of shoeing may be adopted to a very considerable extent; and should it not be found to do all that may (unreasonably?) be expected of it, or should it, in some few cases, be misapplied, it has this valuable negative advantage, that it can do no possible harm. Should, however, my Stoke Newington ally prove to be right, and his thin flat feet, as well as my narrow strong ones, bear this "shameless exposure," so that we may at once "put this and that together," why, then I should not hesitate a moment in going the "whole hog," and declaring that of all the shoes wherewith horses are shod, the unilateral, or to speak less learnedly (if one may venture to do so without the fear of our friends and patrons becoming shoeing-smiths as well as horse-doctors) the old three-quarter shoe is, without the chance of exception, the possibility of competition, or the fear of contradiction, the very best shoe with which a horse can be shod. But (and let this be considered as the postcript in which, as is not uncommon, all that is worth reading is written) having some doubts, or, at any rate, not having any proofs of its universal applicability, I am content to claim for it the advantage of being applicable in a vast number of cases, in which horses go tender and feeling in common shoes; how far it may prevent as well as ameliorate those cases, it remains for a more lengthened experience to decide.

ON HIGH BRED CATTLE.

Sir,—I very much approve of the observations of the "Lancashire Agriculturist;" for in my opinion the greatest talkers, we generally find, are the worst farmers, and that gentlemen generally cultivate the soil to a loss. As for improvement, *what improvement* has taken place, has chiefly originated with the *obscure tenant* farmer; for necessity is generally the mother of invention, and that class of individuals are so frequently hard pressed, that it makes them find the profitable side; and as for the agricultural societies spread over the Kingdom, what good do they do? Why nothing, and worse than nothing; for to read the flaming speeches there spouted forth, and the profits they make of farming, one half the landlords in the kingdom must think farming a golden vocation. I have, with your correspondent, travelled to see the extraordinaries exhibited; and I tell you, Mr. Editor, what I think of a great many of the animals shown. Why I would sooner go and take a few good foresters off Sherwood forest and breed from, than those pampered delicate animals, which, when brought to the test of profit, always bump the scale down on the wrong side. What we want as farmers, is to get possession of that animal that will stand the severities of the seasons, and get fat in a little time on a heavy stocked pasture. I like to see sheep, *fat sheep*, running at the tail of each other, and content to lie down with half a belly full, and yet maintain condition; but the reverse is the case with those who profess to be breeders: we find a score of pampered animals turned into the mowing grass, and if the pretty creatures should have a fancy to a little oil-cake or corn, the needful is supplied, and they are crammed and stuffed to make them and their progeny worthless. The exhibitor of stock should show us that offal half score he has sent to the outside of his farm, on purpose that we may never have the pleasure of casting our eyes upon them, for they have something to do to live, where a good *old fashioned* tenant farmer's would get fat. I was inspecting the stock of a gentleman, residing in my neighbourhood, a short time ago; he in the most condescending manner, accompanied with his steward, went along with me (and I must say he is one of the best men in the world as a landlord, and as a *public* and *private* character); *but to return*—we came in the first place to two young bulls, fine animals, six months old; I asked how they had been reared, and the reply was, plenty of new milk; and if one cow's milk was not enough for one of them, two was made use of. I found the remaining stock such as is usually found at such places. Now, Mr. Editor, what must the stock be from animals artificially fed as those are and will be while they live? I leave any one to judge.

But what would the rack rent farmer do if he was to act upon a principle like that? What would a good housewife say to him (if he had one)? She would soon tell him that the butter, cheese, butter-milk, whey, and all, went together into the calves' bellies, and the profits too, and that poverty would soon knock at the door except the order of the day was changed. Again, these crack breeders point you to their (what they call) profitable side with their pigs, (and every farmer knows the value of a score of good fat thirty stone pigs); and how do they keep them? Why, Sir, I will tell you; they want to be something extraordinary, and so they must prepare animals for show—good mother's milk is not enough; the addition is plenty of cow's milk, with now and then a few quarts of cream, and all cream if the animals will take it, and as if that was not enough to support nature and make her grand, a liberal supply of sugar is added, *and refined sugar too*, with the best round oat-meal and a few oat-grits occasionally, and the common rack-renter is told how profitable the system is, and if he was fool big enough, he might believe it. I tell you, Sir, that I am completely disgusted with your agricultural societies, and fine puffing speeches. I never read a speech in my life that made me one whit the wiser, and half the stock in the country is rendered worthless through these philanthropists. I must conclude, Sir, hoping the rack-rent farmers will soon defend themselves through the same channel.

A Nottinghamshire Farmer.

MANAGEMENT OF PORK.

In Europe, the Russian pork bears a high price; and its quality is supposed to be owing to the pickle in which it is preserved. This is called the "Empress of Russia's Brine," and is prepared as follows: boil together over a gentle fire six pounds of common salt (that in most common use in Russia is rock salt,) two pounds of powdered loaf sugar, three ounces of saltpetre, and three gallons of spring or pure water. Skim it while boiling, and when quite cold, pour it over the meat, every part of which must be covered with the brine. Small pork will be sufficiently cured in four or five days; hams intended for drying, two weeks, unless they are very large. This pickle may be used again and again, if it be fresh boiled up with a small addition to the ingredients. Before putting the meat into the brine, wash it in water, press out the blood, and wipe it clean.

Pickling tubs should be larger at the bottom than at top, by which means when well packed, the pork will retain its place until the last layer is exhausted. When the pork is cool, it may be cut up, the hams and shoulders reserved for bacon, and the remainder salted. Cover the bottom of the tub or barrel with rock salt, and on it place a layer of meat, and so on till the tub is filled. Use the salt liberally, and fill the barrel with strong brine, boiled and skimmed, and then cooled. The following method of preparing hams and shoulders is a good one; as many who have tried it in substance can testify.

To ascertain the probable weight of the meat to be prepared, weigh a number of the hams and shoulders. Then pack them with rock salt in a suitable tub or cask, being careful not to lay the flat sides of the large pieces upon each other, and filling the intervals with hocks, jowls, &c. To every 300lbs. of meat, then take 20lbs. of rock salt, or Onondaga coarse salt, 1lb. of saltpetre, and 14lbs. of brown sugar, or half a gallon of good molasses, and as much water (pure spring water is the best) as will cover the meat; put the whole in a clean vessel, boil and scum: then set it aside to cool, and pour it on the meat till the whole is covered some three or four inches. Hams weighing from 12 to 15lbs. must lie in this pickle about five weeks; from 15 to 25lbs. six weeks; from 25 to 45lbs. seven weeks. On taking them out, soak them in cold water two or three hours to remove the surface salt; then wipe and dry them. It is a good plan in cutting up to take off the feet and hocks with a saw instead of an axe, as it leaves a smooth surface, and no fractures for the lodgment of the fly. Some make only six pieces of a trimmed hog for salting; but it is more convenient when intended for domestic use, to have the side pork, as it is called, cut in smaller pieces.

The goodness of hams and shoulders and their preservation, depends greatly on their smoking as well as salting. Owing to some mis-construction of the smoke house, to the surface of the meat not being properly freed from saline matter, or other causes, it not unfrequently happens that during the process of smoking, the meat is constantly moist, and imbibes a pyroligneous acid taste and smell, destructive of its good qualities. The requisites of a smoke-house are, that it should be perfectly dry; not warmed by the fire that makes the smoke; so far from the fire that any vapour thrown off in the smoke may be condensed before reaching the meat; so close as to exclude all flies, mice, &c., and yet capable of ventilation and escape of smoke. The Westphalian hams are the most celebrated in Europe, principally cured at and exported from Hamburgh. The smoking of these is performed in extensive chambers in the upper stories of high buildings, some of four or five stories; and the smoke is conveyed to these rooms from fires in the cellar, through tubes on which the vapor is condensed and the heat absorbed, so that the smoke is both dry and cool when it comes in contact with the meat. They are thus kept perfectly dry, and acquire a colour and flavour unknown to those smoked in the common method. Hams after being smoked may be kept any length of time, by being packed in dry ashes, powdered charcoal, or by being kept in the smoke-house, if that is secure against the fly, or a smoke is made under them once a week. When meat is fully smoked and dried, it may be kept hung up in any dry room, by slipping over it a cotton bag, the neck of which is closely tied around the string which supports the meat, and thus excludes the bacon bug, fly, &c. The small part of a ham, shoulder, &c. should always be hung downwards in the process of smoking, or when suspended for preservation.—*Albanny Cultivator.*

MR. PRICE'S SALE OF HEREFORD CATTLE.

An authenticated account of the sale of Mr. Price's Hereford cattle will be found in another part of this paper. The classes of prizes offered by the Royal Agricultural Society of England for cattle, show that the Council of that Society recognizes only three breeds as of value for the general purposes of the country, namely, Shorthorns, Herefords, and Devons. To these some of the Sussex farmers are desirous of adding a fourth, namely, the Sussex breed. We have always entertained the opinion that the Sussex is a branch of the Devon family; a zealous writer however, in the *Sussex Express*, has asserted that not only are the Sussex not descended from the Devons, but that "the Devons and Herefords are both descended from the Sussex." This is a point which we will not attempt to discuss, but will leave it to the decision of those who are better skilled in the history of the origin of each of those races—neither is it our intention to go into an examination of the comparative merits of the respective breeds. If such men as Mr. Bates and Mr. Price cannot agree upon that point, it would be hopeless for us to enter upon it. It so happens that, during this year, some important sales of Shorthorned, Hereford, and Sussex cattle have taken place, and although we do not consider that the price which the animals of each breed fetch at such sales is conclusive of their general value, still it is one point whereby to judge of the value which the agricultural class sets upon the breed. Mr. Price in his letter, which will be found elsewhere, hints at the change of prices since the time of the Messrs. Collings, and which may be considered, so far as high prices are concerned, the heyday of the Shorthorns; and we think that the only mode in which a comparison can be instituted in respect to price, is by reference to the prices obtained for animals of the several breeds, and of pure blood, at the current sales of this period. Three sales of prime Shorthorns have taken place lately—that of the Rev. Mr. Higginson, near Thirsk; Mr. Wilson, of Brawith, also near Thirsk; and of Mr. Jaques, of St. Trinians, near Richmond, all in Yorkshire. These were followed by the sale of the Sussex cattle which belonged to the late respected Mr. Putland, of Firle, Sussex, one of the first breeders in Sussex; and of some cattle, the property of Mr. King, of Berwick, Sussex, also a celebrated breeder of that sort of stock. These have been succeeded by the sale of the herd of Herefords, bred by Mr. Price, who has long ranked as a first-rate, if not the most eminent breeder of his day. The latest sale of Devon stock of high character which we recollect was that of Mr. Quartly, of Molland, Devonshire, and which took place on the 16th March, 1836. Mr. Quartly was considered one of the most eminent breeders of Devon cattle, and, we believe, in no instance did animals of that breed realize such prices as at his sale. Thinking that a comparative statement of the prices obtained for animals of the same kind in the several breeds would be interesting, we have instituted a comparison, the result of which is as follows:—

BULLS.

SHORT-HORNS.

Messrs. Higginson's and Wilson's "Sir T. Fairfax," sold for 155 guineas.

Mr. Jaques's "Clementi," 150 guineas.

HEREFORDS.

Mr. Price's "Tramp," 4 yrs. old, 100 guineas.

———— "Young Trueboy," 3 yrs. old, 140 guineas.

SUSSEX.

The late Mr. Putland's 5 yrs. old Bull, 52 guineas.

Of the Devons sold at Mr. Quartly's Sale, there was none of a corresponding age.

YOUNG BULLS.

Mr. Wilson's "Young Sir Watkin," 100 guineas.

HEREFORDS.

Mr. Price's "Washington," 166 guineas.

———— "Murphy Delany," 110 guineas.

Mr. Price's "The Rejected," 110 guineas.

DEVONS.

A Bull of Mr. Quartley's, 21 months old, sold for 97 guineas; and another, 18 months old, for 83 guineas.

Of the Sussex there were none of a corresponding age sold at Mr. Putland's or Mr. King's sale.

BULL CALVES.

Mr. Jaques's "Dulcimer," 105 guineas.

There were no Bull Calves of either of the other breeds sold at these sales.

COWS.

SHORT-HORNS.

Mr. Jaques's "Mermaid," 165 guineas.
—————— "Golden Drop," 160 guineas.
—————— "Lady Ann," 135 guineas.
—————— "Young Rachel," 100 guineas.
The Rev. Mr. Higgiason's "Amazon," 135 guineas.
———— "Alexandrina," 140 guineas.
Mr. Wilson's "Brawith Bud," 160 guineas.

HEREFORDS.

Mr. Price's "Wood-pigeon," 150 guineas.
—————— "Ceres," 115 guineas.
—————— "Tuberose," 100 guineas.

DEVONS.

Mr. Quartley's "Comely," 53 guineas.

SUSSEX.

One at 60 guineas.
One at 50 guineas.

SHORT-HORN HEIFER CALVES.

Mr. Jaques's "Hippodamia," 60 guineas.
—————— "Purity," 51 guineas.
Mr. Wilson's "Snow-drop," 60 guineas.
—————— "White Rose," 42 guineas.

DEVON HEIFER CALVES.

One at 21½ guineas.
One at 18½ guineas.
Of the Hereford and Sussex there were no Heifer Calves sold.

It must be here noticed, that of the Short-horn and Hereford Cows sold, very many fetched prices varying from 50 to 100 guineas, the lowest we have specified being 100 guineas. The general range of prices of the Short-horns and Herefords does not vary much, and the prices of the Devons and Sussex are very similar; whilst there is a most striking difference between either the Short-horns or Herefords as compared with the Devons or Sussex. So far as price is concerned, it should seem that Short-horns and Herefords are very superior to Devons and Sussex; but the important point, as regards the interest of the practical farmer is, which breed will in the ordinary course of business afford the largest profit.—*Mark Lane Express.*

TO THE EDITOR OF THE MARK-LANE EXPRESS.

Sir,—As I am very desirous that an authentic statement of the late sale of my herd of Hereford cattle should appear in one, at least, widely circulated agricultural paper, I herewith transmit you for insertion in your paper of next Monday, if you think proper, a correct account of what each lot sold for, and the name and residence of the purchasers.

The document I have sent you, will give to those who were not buyers, all the information they require; and those who were, and doubtless provided themselves with catalogues containing the short pedigree I therein gave of my stock, have only to procure one of your papers to make their catalogues complete.

Lot.	Age.	Names of Cattle.	Sum.	Purchaser and Residence.
1 —	22	Toby Pigeon	£14	Sir F. Lawley, Bart. Middleton Hall, Warwick.
2 —	10	Browny	25	Mr. Stallard, Redmarley, Worcester.
3 —	10	Young Lovely	29	Mr. Hobbs, Mark's Hall, Essex.
4 —	9	Prima Donna	26	Sir F. Lawley, Bart.
5 —		Her martin calf	7	Mr. Moore, Ham Castle, Worcester.
6 —	9	Burton Pigeon	40	Sir F. Lawley, Bart.
7 —		Her bull calf	30	ditto.
8 —	8	Peg Murphy	42	Samuel Peploe, Esq., Garnstone, Hereford.
9 —	8	Wood Nymph	50	Sir F. Lawley, Bart.
10 —	8	Wood Lark	45	Earl Talbot, Ingestre Hall, Stafford.
11 —		Her bull calf	24	Mr. Jukes, Kearne, Salop.
12 —	8	Duchess	44	Sir F. Lawley, Bart.
13 —		Her cow calf	33	ditto.
14 —	7	Helen	41	Rev. W. P. Hopton Bishop's Froome, Hereford.
15 —	7	Countess	71	Sir F. Goodrick, Bart., Studley Castle, Worcester.
16 —		Her bull calf	36	Mr. Gravenor, Hereford
17 —	7	Victoria	33	Sir F. Lawley, Bart.
18 —		Her bull calf	26	Mr. Hayward, Weston Turvil, Bucks.
19 —	6	Wood Pigeon	150	Mr. Bird, Hampton Court, Hereford.
20 —		Her bull calf	80	ditto.
21 —	6	Dove	77	Rev. J. R. Smythies, Lynch Court, Hereford
22 —	6	Blue Pigeon	74	Earl Talbot.
23 —	6	Woodbine	50	Sir F. Goodrick, Bart.
24 —		Her ox calf	6	Mr. Jukes.
25 —	5	Red Rose	30	Sir F. Lawley, Bart.
26 —	5	Strawberry	50	Earl Talbot.
27 —		Her cow calf	40	ditto.
28 —	5	Laura	73	ditto.
29 —	5	Silver	40	Rev. W. P. Hopton.
30 —		Her cow calf	35	Earl Talbot.
31 —	5	Stock Dove	52	Mr. Pratt, New Field, Warwick.
32 —	5	Prunella	80	Sir F. Goodrick, Bart.
33 —		Her cow calf	28	Earl Talbot.
34 —	5	Woodrose	38	Sir F. Lawley, Bart.
35 —		Her cow calf	42	Earl Talbot.
36 —	5	Nutty	50	Mr. Hearn, Broome Hall, Warwick.
37 —		Her bull calf	67	Sir F. Lawley, Bart.
38 —	5	Wood Lass	50	— Shepherd, Esq., East Wood House, Devon.
39 —		Her bull calf	34	ditto.
40 —	5	Miss O'Councll.	37	Capt. Walters, Barnwood House, Glo'ster.
41 —	5	Rosamond	44	Mr. Hearn.
42 —		Her cow calf	33	Earl Talbot.
43 —	4	Lavender	51	— Shepherd, Esq.
44 —	4	Philomel	36	Sir F. Lawley, Bart.
45 —		Her bull calf	33	ditto.
46 —	4	Young Diana	80	Capt. Walters.
47 —		Her cow calf	40	Sir F. Lawley, Bart.
48 —	4	Flora	42	Earl Talbot.
49 —		Her bull calf	80	ditto.
50 —	4	Beauty	50	Capt. Walters.
51 —		Her bull calf	20	ditto.
52 —	4	Carmelite	63	Sir F. Lawley, Bart.
53 —		Her bull calf	40	— Newbury, Warwick.
54 —	4	White Pigeon	60	Mr. Pratt.
55 —	4	Jay	30	Sir F. Lawley.
56 —		Her bull calf	40	Rev. J. R. Smythies.
57 —	4	Dahlia	30	Earl Talbot.
58 —	4	Dainty	33	Mr. Yeomans, Hereford.
59 —	3	Pied Pigeon	55	Sir F. Lawley, Bart.
60 —		Her cow calf	30	Earl Talbot.
61 —	3	Plover	40	Sir F. Lawley, Bart.
62 —		Her cow calf	40	ditto.
63 —	3	Matchless	66	Capt. Rayer, Hillworth, Worcester.
64 —	3	Pretty Maid	66	Mr. Pratt.
65 —	3	True Love	37	Sir F. Lawley, Bart.
66 —		Her ox calf	5	ditto.

Lot.	Age.	Name.	Sum.	Purchasers.
67 —	3	Prudence	30	Sir F. Lawley, Bart.
68 —		Her cow calf ..	8	Mr. Sharratt, Lichfield, Stafford.
69 —	3	Nonsuch	70	Sir F. Lawley, Bart.
70 —	3	Rock Pigeon ..	48	Capt. Walters.
71 —	2	Tuberose	100	Earl Talbot.
72 —	2	Sappho	52	Sir F. Lawley, Bart.
73 —	2	Cora..........	40	ditto.
74 —	2	Lily	50	ditto.
75 —	2	Rosa..........	40	Sam. Peploe, Esq.
76 —	2	Aurora........	52	Sir F. Lawley, Bart.
77 —	2	Vesper........	46	— Wickstead, Esq., Shakenhurst, Worcester.
78 —	2	Ceres	115	Sir F. Goodrick, Bart.
79 —	2	Giantess	70	Sir F. Lawley, Bart.
80 —	2	Valentine	45	ditto
81 —	1	Crucifix	63	Mr. Pratt.
82 —	1	Kate Kearney..	52	Sir F. Lawley, Bart.
83 —	1	Venus	60	ditto.
84 —	1	Violet	42	— Wickstead, Esq.
85 —	1	Cowslip	30	— Adderley, Esq., near Coleshill, Warwick.
86 —	1	Sunflower	34	ditto.
87 —	1	Daisy	31	ditto.
88 —	1	Primrose	50	Sir F. Lawley, Bart.

BULLS.

Lot.	Age.	Name.	Sum.	Purchasers.
1 —	10	Trusty.........	Not sold.	
2 —	8	Dan O'Connell.		
3 —	8	Woodstock		
4 —	7	Woodpecker ..	56	— Morris, Esq., Salop.
5 —	5	Blenheim......	70	Mr. Pratt.
6 —	5	Satirist........	Not sold.	
7 —	4	Tramp.........	100	Mr. N. Smith, Martley, Worcester.
8 —	3	Blandford	70	Mr. Homes.
9 —	3	Patriot........	72	Mr. Jukes.
10 —	3	The General ..	55	Mr. Walker, Burton Court, Worcester.
11 —	3	Young Trueboy	140	Sir F. Lawley, Bart.
12 —	2	Victory	100	ditto.
13 —	2	Faithful	40	W. Barnaby, Esq., near Bromyard, Hereford.
14 —	3	The Duke	84	Sir F. Goodrick, Bart.
15 —	1	Washington ..	166	Earl Talbot.
16 —	1	Murphy Delany	110	Sam. Peploe, Esq.
17 —	1	Goliah..........	80	Rev. J. R. Smythies.
18 —	1	Forester	30	Mr. Walker.
19 —	1	The Rejected ...	110	Mr. Evans, Pendeford Hall, Stafford.

£5354

£5354 sum realized

26 deduct for lots 5, 24, 66, 68, being ox calves or martins, and one not got by my bull.

£5328

The remaining 99 lots averaged 53*l*. 16s. 4¼d.

I deem it no more than an act of common justice which I owe to those noblemen and gentlemen who were purchasers of the above stock, the greater number of whom have for many years past bred from and patronized my sort of cattle, to give a few further particulars relating thereto:—

On the 17th and 18th of October, 1816, I had sold by auction at my late residence, Ryall, near Upton-on-Severn, 126 head of Hereford cattle, comprising 14 bulls of various ages, 6 bull calves, and 106 breeding cows, heifers, and calves, which, together, realised 6850*l*. 12s. 6d., giving an average of 54*l*. 3s. 2d.

Now, although this average is a little above the average price of my last sale, it will, I think, appear evident on taking into account the length of time (25 years) that has elapsed between the two sales, the great reduction which has taken place during that time (and since the sales of the Messrs. Collins' herds of short-horns) in the price of first-rate herds of cattle, and also of other herds of cattle, together with circumstances too well known to both landlords and tenants to need any comment from me, that the average of my last sale is much the best; thereby placing the herd that gave it on much higher ground compared with all other than they heretofore occupied; and I do sincerely hope, that the hands these animals have fallen into, will take care that they keep their present high position. Should they not continue to do so, and lose caste, the fault will not be in the cattle. I further beg to make known to the public, that during the interval between my two sales, I sold to Earl Talbot, Sir F. Lawley, Bart., J. Gerrard, Esq., of Gibstown, Navan, Ireland, Mr. N. Smith, Martley, Worcester; Mr. Jukes, of Kerne, Salop; the late Mr. Ravenshaw, of the same county; and also to my late and much respected friend, Mr. Jellicoe, of Brighteston, a great number of cows and bulls; the former in lots of two, four, five, six, and eight each—the lowest price for any lot being fifty pounds a head; and two lots, five and six—the former one hundred pounds each, the latter for eighty pounds each; and several bulls, varying from fifty to one hundred pounds each; and my bull Toby, for two hundred guineas. My sole motive for giving the latter part of my statement, is for the purpose of letting the breeders of Herefords know where in future they are most likely to find bulls, &c., of the best sort.

I am, Sir, your obedient servant,

Pool House, October 29. John Price.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—I perceive it is your intention to give us in your next paper, a short account of the sale of Hereford cattle, the property of Mr. Price of Pool House, which took place on the 15th inst. I presume, therefore, any information you may receive relative to it will prove acceptable. The company was the most numerous and respectable I ever saw assembled together—it consisted of noblemen, their stewards, and the principal agriculturists of the kingdom; the biddings were carried on with spirit and competition, and without any unpleasantness until the lot No. 15, of the Bulls; when this lot, Washington, a yearling bull, had reached 160*l*., Mr. Price, not being able to contain himself, came forward and bid 200 guineas; he seemed much hurt in parting with his splendid stock of Herefords. I was the bidder of 160*l*., I therefore stated to Mr. Price and the Auctioneer, that I considered Mr. Price's bid not in accordance with what both had stated at the commencement of the sale, namely, that the whole would be sold without the least reserve; upon this Mr. Price immediately, handsomely withdrew his bidding, and the lot was eventually knocked to me for 166*l*.; immediately afterwards, I had 100 guineas offered for the use of him for 12 months, and another individual offered me 50*l*. for my bargain; he is to be added to the already splendid stock belonging to the Earl of Talbot, who has now the most extensive and best selected stock of pure bred Herefords in the kingdom.

I am, yours respectfully,

Colton, Rugeley, Oct. 28. John Yates.

I subjoin a list of a part of my purchases:—

	£	s.	d.
No. 27. Cow Calf	40	0	0
,, 28. Laura....................	73	0	0
,, 30. Cow Calf	35	0	0
,, 33. do.	28	0	0
,, 35. do.	42	0	0
,, 42. do.	33	0	0
,, 60. do.	30	0	0
,, 71. 2 Year Old	100	0	0
,, 15. Yearling Bull, Washington ..	166	0	0

MR. PRICE'S SALE OF HEREFORDS.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

Sir,—The readers of your paper were doubtless much gratified by the statement you gave therein last Monday of the sales of Hereford, Short-horn, Sussex, and Devon cattle, that had recently taken place, and also by the impartial and just remarks you made thereon (errors excepted); one of which I beg to notice, namely, that at the end of your statement, where you say, "of the Hereford and Sussex there were no heifer calves sold," when, in the account you gave of my sale in the same paper, it clearly appears that ten cow calves were sold exclusive of the martin, and lot 51, out of Beauty, which was a cow calf, though entered by mistake as a bull; there were also eleven bull calves sold. Having disposed of these errors, I feel inclined to go a little further into detail relative to my late herd of cattle, than I had time to do last week. In the account I then sent you, I omitted to state the cause that prevented the four bulls—Trusty, Woodstock, Dan O'Connell, and Satirist—being sold: when the two former were put up for sale, I stated it to be my opinion that it was uncertain whether either of them would get calves, consequently there was no bidder for them. Dan O'Connell, which I had let to Mr. Juckes, of Team, for the three last seasons, could not be got home owing to his having recently had the epidemic, which affected his feet so as to render him unable to stand; and Satirist, that was let to Mr. Brooks, of Burton, near Much Wenlock, met with an accident some time back that prevented his being got home. These misfortunes alone made a considerable drawback to what otherwise would have been the average of my sale; as Woodstock, had he not been made useless by the epidemic (which he had last winter) for getting calves, would have sold for a considerable deal more than any other of my bulls; and the two latter, I have good reason to know, for not less than a hundred pounds each.*

Another material drawback on the amount my stock would have sold for was, that about six weeks prior to the time my sale took place, the epidemic made its appearance among my two and three year-old heifers—all of which, with these exceptions, had it *severely* in their feet, which reduced their condition very much; and many of them, at the time they were sold, were very lame. This was a *telling* loss to me, as Tuberose and Ceres, that escaped the malady, proved—the former fetching one hundred pounds, the latter one hundred and fifteen; whilst others of the same age, equally good and well bred, did not sell for half the money: and the result was similar in the sale of the three year olds. In addition to this, twelve of my bulls did not come home from those persons living in various parts of the kingdom, who had used them this year, more than a week prior to my sale; and many of them in very low condition. All these matters tended to lessen what my stock, under other circumstances, would have sold for.

I fully agree with you in your closing remarks, that the important point for persons to consider is to breed and keep those cattle and sheep that will pay the most money for the food they have to give them; this has always been my opinion, and have as far as it was practicable acted upon it by breeding the cattle I did, and Leicester sheep bred purely from Mr. Buckley's flock: and I will leave the public generally to decide, after having received the statement I am about to make of the size of the farm I have occupied for the last twelve years, the quality of land, and the buildings thereon, together with the number of stock I have usually kept, as my late sale will prove, whether I have not cause to be satisfied with the result.

The farm that I have occupied since 1829 has not at any time much exceeded one hundred and fifty acres; twenty of which are arable, totally unfit for the growth of turnips, and nearly one hundred and twenty acres, part of the Croome demesne, belonging to the Earl of Coventry, in one ground, and rather below second-rate quality of land, greatly covered with ornamental timber, and neither buildings or fold-yards on my farm sufficient to hold twenty beasts; yet on this land I have usually kept one hundred head of cattle, together with a flock of two hundred and fifty sheep, forty of which were rams, beside my cart and other horses. These are facts well known to the whole of my neighbours, who have always given me full credit for being the worst keeper of stock in England. I have seldom made use of oil cake, and on no occasion have I given corn or meal to any of my stock. With regard to the price my stock made at my sale, as compared with the limited number sold at the sales of either Mr. Jaques or the Rev. Mr. Higginson, no just inference can be drawn; as twenty-one head, the number sold at each of these sales, cannot I think be deemed a herd of cattle. Mr. Wilson's, sixty-three in number, I admit to be so, but that number falls short of the average of my herd (nearly double in number) by more than ten pounds per head; and even by taking the total number of cattle, one hundred and five at the three sales, and the amount of money they made, they will not average as high as mine by 1*l*. 18s. 4½d. each.

I am sorry to have troubled you at such great length, and remain yours, John Price.

Poole House, Nov. 3.

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* Both these bulls, when fit for use, will be for sale.

AGRICULTURAL EXPERIMENT.—On the 6th of last May five alternate ridges of wheat, measuring one acre, two roods, and four perches, were sowed with 5 cwt. of nitrate of soda, in a field on the Gnoll estate, in this county. In a few days the difference between the ridges sowed with the nitrate and the intervening ridges of the same size could be discerned at a considerable distance from the field, which continued throughout the summer. The two sorts have been reaped, thrashed, measured, and weighed separately, and the following is a correct account of the produce:—Nitrate, 48 bushels, weight per bushel 56lbs.; straw, 2 tons 4 cwt. 3 qrs. 5lbs. The other, 23 bushels, weight per bushel 55lbs.; straw, 1 ton 5 cwt. 1 qr. 2lb. The quality of both was inferior, but the nitrate wheat would have been a better crop if a less quantity of the nitrate had been sown.—*Cambrian.*

SICILIAN WHEAT.—The superior quality of Sicilian wheat is still maintained, though agriculture in the island has greatly degenerated. In 1837 Sicily exported 50,000 quarters of wheat, though scarcely one quarter of its land, capable of raising corn, was in cultivation. "Sicily," says Mr. Macgregor, in his report on the commercial statistics of the island, is capable of producing an overplus on her own wants of at least half a million quarters of corn, costing at or under 30s., and the wheat is unquestionably of excellent quality, weighing from 470 to 480 lbs. English per quarter." Sicilian wheat is, it is true, very hard and difficult to grind, but the Sicilians grow hard wheat because the bread made from it is more nutritious, and less liable to spoil.

ON DESTROYING SLUGS.

Mr. Editor,—Permit me, through your widely-circulated journal, to inform my brother farmers the most expeditious, efficacious, and cheapest method of destroying slugs, when the clover, pea, and bean lands cannot be trodden by sheep, as in this unfavourable season. Provide, fresh from the kiln, sufficient lime, allowing 5 bushels per acre; slack the lime two days before sowing; choose a calm, mild morning; commence sowing early enough to finish before day-light; one man can sow one acre per hour, sowing two yards at a cast.

I am, Mr. Editor, yours most respectfully,

Harlow, Nov. 6. H. C. Wentworth.

LIVERPOOL, October 26th.

On transmitting to you this our usual *Annual* Circular Letter, we must apologize for the tautology almost unavoidable in writing on subjects so nearly similar; and we think it best to follow the same plan of paragraphs as in former letters, for the purpose of facilitating references.

Since our Harvest Circular, dated 27th October, 1840, we have continued, by an uninterrupted series of *Weekly* letters, every Tuesday, our best endeavours to communicate to our friends briefly, but with candour and sincerity, the state of this and of our neighbouring corn markets; making occasionally such remarks on the prospects of the corn trade generally, as we considered useful; in those of the last six months we have frequently recorded the state of the weather, and consequent progress of agricultural operations, and of course of harvest—the result of which, *in this district*, might have been pretty correctly stated four weeks ago; but our crops bear so small a proportion to the consumption of our great surrounding population, which makes this town always an *importing port* for Grain to a very large extent annually, that we consider this of less importance to corn merchants, to whom more extended information can *alone* be useful. We have therefore postponed this letter, that we might obtain better information from the influential corn counties of England, and more particularly from Scotland and Ireland, where they have had a protracted harvest; and thus to render this letter more useful, and more worthy of being trusted to for future reference.

We have often remarked, that by a careful observation of the weather (if faithfully and judiciously reported) a very good idea of the crops generally may be formed, even if deprived of personal observation; and in the absence of all publicly authorised investigation into this interesting subject, we cannot devise a better mode of assisting our friends in forming their own judgment, than by a brief recapitulation of the weather, since the harvest of 1840—and that not locally, but pretty generally throughout the United Kingdom; on reference to which, we find, that both the winter and spring seed time were favourably accomplished every where; and although the winter was very severe, reports of all the crops were favourable up to the beginning of June, excepting for Wheat, which in many counties, as well as in this one, was said to be *thin* on the ground. The weather during June and July was cold and irregular, alternately wet and dry—the former prevailing—so seriously in the southern corn districts as to excite alarm, and an advance in the value of Wheat, in the London markets, towards the third week in July; in the last week of which, and in the early part of August, it *continued* cold and very irregular, giving a prospect of a late and very precarious harvest, and causing a further considerable advance in the prices of Wheat everywhere, so that on the 20th of that month British Colonial Wheat and Flour became admissible at the *lowest* duty; notwithstanding which, and the weather being more favourable in the last week of August and first week of September, which caused a serious decline in the prices of Wheat, the averages had previously got such an *impulse*, that on the 17th of September the *lowest* duty of 1s. per qr. became payable on Wheat, and of 7¼d. per barrel on Flour, from foreign ports; but this continued for *only one week!* On the 24th of September the duty on Wheat became 2s. 8d. per qr.; on the 1st of October, 10s. 8d.; on the 8th, 16s. 8d. (thus virtually prohibitory!) on the 15th, 20s. 8d. per qr.; and then again raising the duty on Colonial Wheat and Flour to the highest (5s. per qr. and 3s. per barrel!) Upwards of *two millions* of quarters were however admitted in the interim into the United Kingdom at the *lowest* duties; whereof about 200,000 quarters of Foreign Wheat, and about 140,000 barrels of Foreign Flour, were in this port; besides about 18,000 qrs. of Wheat, and 130,000 brls. of Flour, recently imported from British colonies; and in the *first week of October*, 1841, *no Wheat or Flour* was considered to remain *in bond* in the United Kingdom! The weather during the whole of this month has been the worst ever remembered; cold and stormy, with almost incessant rain—completely preventing all progresss in the winter seed time—most destructive to the Potato crops, and very unfavourable for securing the crops of Grain in *late* situations in Scotland and Ireland, where we are sorry to say some quantity, by reports recently received, which it is to be hoped may prove exaggerated, still remains abroad, and thus protracting the *conclusion* of harvest; in our opinion respecting which, if we find we have in any respect been misinformed, we shall rectify it in our *quarterly* letter in January next; believing however at present, that we shall not prove far wrong.

Referring to the above paragraph, we feel justified in stating, that this harvest, though tantalizing to the farmers, has been less expensive than in many former years. In this district it may be considered to have commenced *generally* about the third week of August, and to have been pretty well accomplished about the end of September. In the southern and more early districts it commenced and ended about three weeks *earlier*; in the northern and later districts, and through Scotland and Ireland, three or four weeks *later*. Reports received from many correspondents, as well as by letters in the *Mark Lane Express*, and in other public papers on this subject, differ so widely, that it is no easy matter to form a decided opinion; but when we consider, that with the exception of three or four days about the middle of September, which were really fine, hot, and summer-like, the weather has throughout the whole year been cold, irregular, and unseasonable, deficient of sunshine and summer heat, and unfavourable for bringing the crops to *proper maturity*, full averages could hardly be expected; though on the surface of the land the *appearance* was favourable, and no doubt in some partial situations the crops will be good averages in all respects; but confirmed by the decided opinion of those in whom we have always placed confidence, we believe that it will be found that the crops of Wheat throughout the United Kingdom of Great Britain and Ireland (notwithstanding the *reported* increase of land under this grain this season) will assuredly prove very deficient of a full average crop in quantity and quality, to an extent not at present ascertainable. Barley is also considered a very moderate average crop in quantity, and deficient in quality. All other spring grain, below a moderate average in quantity and quality. Hay, a full average in quantity, but badly saved, and defective in quality. Potatoes are too generally reported of bad quality, but the real state of this valuable article is not yet ascertained. The pastures have continued very good all this season. The crops of mangel-wurzel and turnips are also reported favourably.

From the corn provinces in the North of Europe and from those in the Mediterranean, from whence we get supplies of grain; also from the United States, and from Canada, reports of their crops and harvest are favourable, though they have also been partially impeded by rain; and although the duties will for a time check the imports, we shall no doubt have considerable further supplies from thence early in the spring.

We now annex as usual statements of imports of grain into this port for a long series of years, made up from authentic sources weekly, with every personal care—up to the 1st of October in each year; also a comparison of the imports half-yearly and annually—on which we must leave our friends to make their own comments. If it had not been for the valuable and extensive supply of Wheat from foreign ports, and particularly of Flour from the United States and from Canada, as stated in a preceding paragraph, this kingdom would have experienced great inconvenience; and although it has been relieved from *bond* too much *at one time*, it is going rapidly into consumption to many distant markets around us, and to Ireland, from whence the quality of the Wheat last year, though better than in the one preceding, was very bad,—both English and Irish of this year's growth are also of very inferior quality, and must have a mixture of foreign; continuing still in the belief that *even a full average* crop of Wheat is *not fully* adequate to the annual consumption of this kingdom, except by the expensive cultivation, as in 1834 and 1835, of land which may be appropriated to much better purposes; and that the crop of 1840 is now very much exhausted; we feel confident that all the foreign Wheat and Flour now here, and expected, will be wanted for mixture; and that though fluctuations will occur, our present prices will prove *moderate averages* for many months to come; notwithstanding our stocks here free for home use are pretty considerable;—about 150,000 quarters of Wheat, about 135,000 barrels of Flour, including Canadian; about 15,000 quarters of Oats, about 25,000 loads of Oatmeal, and about 60,000 quarters of Beans, chiefly Egyptian:—very little grain *in bond*, but about 15,000 qrs. of Oats; though it is now beginning again to accumulate.

Having been so often disappointed in our anticipation of a change in the corn laws, we had almost resolved to have dropt the subject; but finding we have room in this page, we now recapitulate former remarks. Recent events, and this matter having now become a *ministerial question*, will probably lead to some alteration in March next; this important subject, which should only be considered with a view to the public good, has recently become a question for the discussion of *two parties*, whose interests *should* be inseparable, but whose ideas respecting it appear very opposite! the one contending for nothing short of a total abolition of those laws,—the other for their continuance, and if possible, to render them more stringent; the good and evil anticipated therefrom seem to us greatly exaggerated by both parties!—a motion *even* for the "consideration of the corn laws" having been negatived in both Houses of Parliament by large majorities; and thus a moderate and equitable modification of the present laws, which might have been generally acceptable, and which might have proved durable, was then evaded, and may ere long be conceded, to a much greater extent, to clamour and agitation! for this matter is by no means set at rest, and will no doubt undergo a discussion in March next; it is no easy matter to arrange a plan of *fixed duties*, to the satisfaction of all parties, or any ways likely to be permanent; we now repeat a suggestion, frequently made, for an equitable and conciliatory modification, having never observed any other proposal more simple and practicable. Suppose that regulated by the present laws as to averages, which though not faultless, are perhaps as good as can be devised, and the *bonding system continuing unaltered*; "whenever the aggregate average price of Wheat shall attain 66s. per imp. qr., a duty of 4s. per qr. should be paid, and *never lower*; and that at an average of 54s., the duty should be 16s. per qr, and *never higher*," fluctuating 1s. per qr. between these extremes, as by the present laws; and the duties on all other grain from foreign ports, and from British colonies, to be reduced in a fair proportion; thus the farmers would never be alarmed by sudden importations of grain from foreign ports at the *present lowest duties*, and the merchants would not incur the destructive inconvenience of having their grain locked up *in bond*, frequently for years, by duties virtually prohibitory.

James Scott & Son.

GENERAL IMPORTATION OF GRAIN AND FLOUR INTO LIVERPOOL FOR THIRTY-THREE YEARS.

	Wheat, Qrs.	Oats, Qrs.	Barley, Qrs.	Beans, Qrs.	Malt, Qrs.	Flour,		Oatml. Sacks, 240 lbs.
						Bags.	Brls.	
From 1st Oct., 1808, to 1st Oct., 1809..	114,000	466,000	30,000	7,000	11,000	13,000	170,000	
From do. 1809, to do. 1810 .	160,000	338,000	26,000	14,000	54,000	12,000	109,000	
From do. 1810, to do. 1811..	137,000	150,000	9,000	8,000	25,000	21,000	28,000	
From do. 1811, to do. 1812..	115,000	205,000	51,000	4,000	20,000	27,000	13,000	
From do. 1812, to do. 1813..	166,000	484,000	72,000	6,000	30,000	52,000	....	
From do. 1813, to do. 1814..	211,000	336,000	34,000	17,000	34,000	60,000	....	
From do. 1814, to do. 1815..	261,000	359,000	37,000	22,000	50,000	59,000	80,000	
From do. 1815, to do. 1816..	112,000	354,000	46,000	16,000	38,000	37,100	....	
From do. 1816, to do. 1817..	218,000	342,000	78,000	15,000	35,000	4,500	520,000	
From do. 1817, to do. 1818..	240,000	417,500	63,700	19,700	43,000	3,000	371,000	
From do. 1818, to do. 1819..	238,966	396,720	65,502	38,326	36,633	35,017	49,606	
From do. 1819, to do. 1820..	344,545	318,505	66,635	18,759	38,202	37,679	127,429	
From do. 1820, to do. 1821..	348,371	366,834	59,902	26,875	44,273	80,194	89,975	
From do. 1821, to do. 1822..	320,863	251,081	43,412	22,214	46,890	71,665	15,031	
From do. 1822, to do. 1823..	332,609	293,802	27,224	23,814	49,047	115,848	5,568	
From do. 1823, to do. 1824..	189,947	382,846	36,412	27,694	50,545	55,292	91,776	
From do. 1824, to do. 1825..	387,082	628,992	49,411	25,795	62,218	97,949	37,101	58,000
From do. 1825, to do. 1826..	325,619	388,277	62,736	22,049	64,904	91,828	17,736	59,000
From do. 1826, to do. 1827..	404,531	499,169	99,807	51,295	55,814	93,038	60,914	48,000
From do. 1827, to do. 1828..	352,298	605,968	56,849	34,563	75,105	163,584	25,881	135,920
From do. 1828, to do. 1829..	435,961	472,147	52,151	25,202	59,979	100,326	156,112	117,000
From do. 1829, to do. 1830..	466,046	486,739	71,341	32,963	50,340	96,605	239,458	112,000
From do. 1830, to do. 1831..	727,443	447,319	69,837	28,918	91,800	82,487	699,910	136,000
From do. 1831, to do. 1832..	484,859	471,857	54,300	27,389	78,689	173,566	81,662	176,800
From do. 1832, to do. 1833..	528,759	379,411	60,600	20,275	79,132	293,665	46,639	216,000
From do. 1833, to do. 1834..	460,814	317,062	60,166	41,026	84,197	270,357	46,437	144,100
From do. 1834, to do. 1835..	350,584	266,049	71,288	27,260	86,441	304,486	14,916	176,820
From do. 1835, to do. 1836..	413,584	359,294	73,840	53,543	112,688	368,097	58,867	218,692
From do. 1836, to do. 1837..	334,264	358,483	92,645	47,722	85,933	249,260	80,179	196,672
From do. 1837, to do. 1838..	357,359	349,106	48,659	36,409	89,844	336,458	60,137	327,446
From do. 1838, to do. 1839..	729,337	334,259	89,963	36,703	78,252	152,185	229,072	256,327
From do. 1839, to do. 1840..	580,145	328,761	142,222	47,374	73,381	56,077	574 565	270,937
From do. 1840, to do. 1841..	518,565	328,275	63,001	80,365	21,337	85,461	407,837	352,009

A PARTICULAR COMPARISON OF THE IMPORTS OF GRAIN AND FLOUR INTO LIVERPOOL FOR THE TWELVE MONTHS

Ending the 1st October, 1841, with those during the same period ending 1st October, 1840, distinguishing the Importations of each Half-year.

	WHEAT, Qrs.			OATS, Qrs.			BARLEY, Qrs.			BEANS, Qrs.			MALT, Qrs.		FLOUR, Bags.	Brls.	O'MEAL. Sks. 240lb
	Ireland.	Coast.	Foreign.	Ireland.	Coast.	For.	Ireland.	Coast.	For.	Irld.	Coast.	For.	Coast.	Ireland.	Cst. & Hd.	Foreign.	Ireld.&Co.
From 1st October, 1839, to 31st March, 1840, six Months	51632	107076	97901	190114	6917	17334	9055	28668	24428	3535	8730	18967	22991	692	42717	203038	221745
From 1st October, 1840, to 31st March, 1841	66242	89860	59764	159278	11741	2511	17481	27667	..	2339	6826	9898	34293	2268	48331	154804	213207
Increase or Decrease during the first Six Months.......	4610 Incr.	17216 Decr.	38137 Decr.	30836 Decr	4824 Incr.	14823 Decr.	8426 Incr.	1001 Decr.	24428 Decr.	1196 Decr.	1904 Decr.	9069 Decr.	11302 Incr.	1576 Incr.	5617 Increase.	48230 Decrease.	8538 Decrease.
From 1st April, 1840, to 30th September, 1840	12505	46028	265003	83827	2755	27813	6389	9348	64334	2724	7612	5808	48318	880	7360	371427	49194
From 1st April, 1841, to 30th September, 1841	27511	44646	230542	121926	15670	17149	5272	5878	6703	513	10061	50701	43375	1401	37127	253033	138800
Increase or Decrease during the last Six Months.........	15006 Incr.	1382 Decr.	34461 Decr.	33099 Incr.	12915 Incr.	10664 Decr.	1117 Decr.	3470 Decr.	57631 Decr.	2181 Decr.	2449 Incr.	44893 Incr.	5443 Decr.	521 Incr.	29767 Increase.	118394 Decrease.	89606 Increase.
Total Import into Liverpool from 1st Oct. 1835, to 1st Oct. 1836.........	245168	98599	69817	292069	42825	24400	26090	43374	4376	19419	13718	20406	102126	10562	368097	58867	218692
Do. do. from 1st Oct. 1836, to 1st Oct. 1837...... ..	132690	71658	129916	277232	35573	45678	41303	37993	13350	14072	11842	21810	81835	4098	249260	80179	196672
Do. do. from 1st Oct. 1837, to 1st Oct. 1838.......	164215	57011	136103	295774	35746	17586	22979	24589	1091	14595	15672	6142	87909	1935	336458	60137	327446
Do. do. from 1st Oct. 1838, to 1st Oct. 1839.........	99585	121409	508343	292544	16151	25264	18863	39207	31893	6931	12320	17452	77671	579	152185	229072	256327
Do. do. from 1st Oct. 1839, to 1st Oct. 1840.... ...	64137	153104	362094	273942	9672	45117	15444	38016	88762	6259	16342	24775	71809	1572	56077	571565	270939
Do. do. from 1st Oct. 1840, to 1st Oct. 1841.........	93753	134506	290306	281201	27411	19 60	22753	33545	6703	2882	16887	60599	77668	3669	85461	407837	352907
Increase or Decrease in the twelve Months ending 1st Oct. 1841, compared with the preceding 12 Months...	29616 Incr.	18598 Decr.	72598 Decr.	7262 Incr.	17739 Incr.	25487 Decr.	7309 Incr.	4471 Decr.	82059 Decr.	3377 Decr.	545 Incr.	35824 Incr.	5859 Incr.	2097 Incr.	29384 Increase.	166728 Decrease.	81068 Increase.

Besides the above-mentioned Imports into this Port from the 1st October, 1840, to the 1st October, 1841, *(in which are now included those which pass up this river to Runcorn and Manchester, and also about* 33,000 *qrs. of Wheat and about* 224,000 *brls. of Flour from Canada--also about* 13,500 *bags Flour from the East Indies)* we have had about 32,000 qrs. of White Peas, about 8,700 qrs. of Indian Corn, *from Foreign Ports;* of the imports of Wheat from Ports Coastways, nearly *three-fourths* are of Foreign growth, and brought hither *in bond,* chiefly, and also duty paid.

STEWPONEY AGRICULTURAL SOCIETY.

The First Annual Meeting of this society was held on Tuesday, Oct. 26.

A convenient show-yard was fitted up in a field adjoining the inn. The stock exhibited was comparatively small (this not forming part of the premiums of the society), but several good animals were shown by the kindness of gentlemen willing to contribute to the interest of the day. The implements exhibited were most of them ingenious and useful.

The following were the

PRIZES AWARDED.

Five sovereigns for the most beneficial application of manures in general—to Mr. Thomas Lowe, of Trysull, for lime and salt tried on old turf against compost.

Ten sovereigns for the best crop of Swede turnips, not less than ten acres—to Mr. Charles Harris, of Beech House Farm, Trysull.

Candidates.—W. W. Whitmore, Esq., Dudmaston; Mr. John Robins, Dunsley; Mr. James Corbett, Prestwood; Mr. John Yardley, Stapenhill; Mr. William Perry, Swindon; Mr. Thomas P. Pudsey, Seisdon: Mr. Charles Harris, Trysull.

Ten sovereigns for the most satisfactory experiment on the comparative merits of the different processes of subsoil and trench ploughing, and double trenching with spade.—This experiment not being fully proved, the judges do not feel justified in awarding this premium.

Candidates.—Mr. John Aston, Seisdon; Mr. Thomas Birch, Churchill; Mr. G. P. Aston, Seisdon.

The judges were Mr. Charles Grazebrook, Kingswinford; Mr. John Wilson, Aston; and Mr. George Roden, Sutton.

Twenty Sovereigns for the exhibition (by model or engine) of the most useful application of steam to agricultural purposes, combining the following considerations:—Practical utility, cost, portability, variety of operations, simplicity of management, saving of manual labour, liability to accident, economy in fuel—to Mr. John Wilson, of Aston.

Candidates.—Mr. John Wilson, Aston, *steam-engine, applicable to agricultural purposes*; Mr. W. A. Lyndon, Birmingham, *steam thrashing machine*; The Patent Disc Engine Company, Birmingham, *portable disc steam engine, applicable to a variety of agricultural purposes.*

Five sovereigns, under Rule VII. of this society, for the most useful, new, or improved agricultural implements; to be exhibited at Stewponey, at the meeting in October—to W. B. Collins, Esq., for the revolving harrow.

Candidates.—W. B. Collis, Esq., Stourbridge, *revolving harrow*; Mr. John Nock, Kinver, *bean-crusher, and three-knife hay and straw cutter*; Mr. John Davies, Stewponey, *Biddell's scarifier*; Mr. W. A. Lyndon, Birmingham, *an improved chaff-engine, to be worked by hand or steam*; Mr. Tomlinson, Wolverhampton, *four-furrow bone drill, one furrow ditto, double ridge ditto, one-furrow ridge ditto, turnip cutter for cattle, and sowing machine.*

The judges were James Foster, Esq., Stourton Castle; Mr. Charles Grazebrook; and Mr. John Yardley, Stapenhill.

Five sovereigns for ploughing match, on the following conditions:—Half an acre of land to be ploughed with G.O. ploughs without wheels, nor less than six inches deep, and the furrow not more than nine inches wide. The plough and horses to be *bona fide* the property of the competitor, and the ploughman his regular servant. The time allowed for the ploughing two hours and a half.

The following were the competitors:—W. W. Whitmore, Esq., Dudmaston; E. L. Gatacre, Esq., Coton; W. Foster, Esq., Wordsley House; Joseph King, Esq., Whitehall; W. B. Collis, Esq., Stourbridge; Captain Dickens, Woodford Grange; Mr. J. Brindley, Union Hall; Mr. Richard Evans, jun., Wolverhampton; Mr. Thomas Lowe, Trysull.—The five sovereigns were awarded to Edward Lloyd Gatacre, Esq.

LABOURERS.

Three sovereigns to the best ploughman—to Joseph Cuthbertson, labourer to E. L. Gatacre, Esq.

Two sovereigns to the second-best ploughman—to John Rowlin, labourer to Mr. Richard Evans.

Several prizes were given to servants in husbandry and household servants.

The ploughing match was held in a field not far distant from the show-yard.

A revolving harrow, the property of W. B. Collis, Esq., Stourbridge, and a subsoil plough, belonging to J. H. H. Foley, Esq., of Prestwood, were also in operation in different fields near, and attracted much attention.

202 members and their friends sat down to an excellent dinner (Lord Lyttleton in the chair), in a spacious tent, sixty feet by forty, erected for the purpose, leading from the show-yard, capable of containing 250 persons. The arrangements made by Mr. Griffin, of Wolverhampton, who provided the tent, and of Mr. Davies, the landlord of the Stewponey, who furnished the dinner, appeared to give general satisfaction. Among the company we observed—the Honourable Spencer Lyttleton; Sir Thomas Winnington, Bart.; Sir H. H. Lambert, Bart.; J. H. H. Foley, Esq.; W. W. Whitmore, Esq.; H. M. Campbell, Esq.; A. Skey, Esq.; W. Mosely, Esq.; C. Noel, Esq.; J. Foster, Esq.; E. Dixon, Esq.; Rev. Dr. Penfold; Rev. J. Baker; Rev. C. S. Cocks; Rev. R. Foley; Rev. G. Wharton; J. Brown, Esq.; F. Rufford, Esq.; W. Trow, Esq.; S. S. Briscoe, Esq.; W. Grazebrook, Esq.; G. Grazebrook, Esq.; W. B. Collis, Esq.; J. King, Esq.; E. Rogers, Esq.; and Mr. Ransom, of Ipswich.

The following toasts were drank:—"The Queen," by the Chairman; "The Queen Dowager, Prince Albert, and the rest of the Royal Family," by the Chairman; "The President, the Earl of Stamford and Warrington, and success to the Stewponey Agricultural Society," by the Chairman; "The judges of the implements and machinery," by the Chairman; "The Chairman, Lord Lyttelton," by J. Foster, Esq.; "The judges of the turnips, &c.," by the Chairman; "The successful candidates for do.," by C. Grazebrook, Esq.; "The Secretary, J. H. H. Foley, Esq.," by the Chairman; "The Royal Agricultural Society," by J. H. H. Foley, Esq.; "The exhibitors of implements and the successful candidates," by W. W. Whitmore, Esq.; "The exhibitors of Stock," by J. Aston, Esq.; "Lord Ward," by S. S. Briscoe, Esq.; "The Committee," by the Chairman; "The agricultural labourers," by J. H. H. Foley, Esq.; "The strangers who have honoured this meeting with their presence," by H. M. Campbell, Esq.; "Vice-presidents of this society," by J. Brown, Esq.; "the Worcestershire Agricultural Society," by the Chairman; "Mr. Ransom," by the Chairman; "The Assistant Secretary, Mr. Thompson," by Sir J. Winnington; "The Agricultural and Commercial Interests of the Country," by W. Grazebrook, Esq.; "The Earl Talbot and the Lichfield Agricultural Society," by the Chairman.

Several excellent speeches were made; the whole passed off with the utmost harmony and good humour, and the society promises to become one of considerable importance. The number of members were announced by the secretary to be 176, and the circuit of the society was extended from ten miles to twelve. It was also proposed to form a benefit club for persons of both sexes, to include the whole district of the society, on a similar plan to the Beecher Club, established with so much success in Warwickshire.

MILNTHORPE AGRICULTURAL SOCIETY.

The sixth anniversary of this flourishing society was held on Monday, October 18. The number of cattle, &c., shown was not so great as might have been expected, but Mr. Ellison stated, at the dinner, that this was caused by the Milnthorpe show being held after the others, and the farmers were discouraged from bringing their stock to compete with the animals which had taken the premiums of the other exhibitions. There were several very superior bulls shown. Mr. Ellison, of Sizergh, exhibited a number of his very fine stock.

The judges were Mr. Thomas Robinson, Wilson House, Milnthorpe; Mr. John Clark, Crosthwaite; and Mr. J. Newby, of Helsington.

THE DINNER.

Precisely at three o'clock, the members and friends of the society sat down to an excellent dinner, prepared by Mrs. Hudson, at the Cross Keys Inn. John Thexton, Esq., of Beethom, presided, and amongst the gentlemen present were G. Wilson, Esq., Dallam Tower; Major Hutton, of Beethom; Rev. John Thexton, of Beethom; Mr. Ellison, of Sizergh, with his two agricultural pupils, the Hon. Frederick Petre, son of Lord Petre, and Mr. Vasason, son of Sir Edward Vasason, bart; Mr. R. Remington, of Kendal; Mr. G. Braithwaite, of Plumbtree Hall; W. H. Bolland, Esq., Haverbreck; T. Kitchen, Esq., Milnthorpe; and the leading farmers in the district.

The usual loyal and complimentary toasts were drunk.

The secretary, Mr. Hutton, then read the premiums awarded.

PREMIUMS.

For the best yearling bull, of any breed, 2*l.*—Two competitors. Mr. Anthony Barnes, of Selside.

For the best bull, of two years old or upwards, of any pure breed, 2*l.*—Four competitors. Thomas Scott.

For the best yearling long-horned heifer, 1*l.* 10s.—Three competitors. Allan Kirk.

For the best yearling short-horned heifer, 1*l.* 10s.—Six competitors. Obadiah Burrow.

For the best two year old long-horned heifer, 2*l.*—Three competitors. Obadiah Burrow.

For the best two year old short-horned heifer, 2*l.*—Five competitors. Mr. John Hodgson.

For the best long-horned cow, in calf or milk, and not fed for the butcher, 2*l.*—Two competitors. Mr. John Garnett.

For the best short-horned cow, in calf or milk, and not fed for the butcher, 2*l.*—Three competitors. Mr. Richard Wilson.

For the best two year old heifer, raised from a cross of any breed, 1*l.* 10s.—Five competitors. Mr. John Jennings.

For the best shearling ram, of the improved breed, 1*l.* 10s.—One competitor. Robert Kendall.

For the best shearling ram, of the crag breed, 1*l.* 10s.—Two competitors. Mrs. Scott, Farleton.

For the three best one-shear gimmers, of the improved breed, 1*l.* 10s.—Four competitors. Joseph Addison.

For the three best one-shear gimmers, of the horned breed, 1*l.* 10s.—One competitor. Robert Addison.

For the best shearling ram, of the southdown or short wool breed, 1*l.*—Three competitors. William Wilson.

For the three best shearling gimmers, of the southdown or short wool breed, 1*l.*—Two competitors. W. Ellison, Sizergh.

For the best yearling gelding, 1*l.*—Four competitors. William Wilson.

For the best yearling filly, 1*l.*—One competitor. James Burrow.

For the best two year old gelding, 1*l.* 10s.—Three competitors. Thomas Walker.

For the best two year old filly, 1*l.* 10s.—Three competitors. Edward Gibson, Kendal.

For the best breeding sow, 1*l.* Two competitors. Mr. L. Hodgson.

For the best boar, 1*l.* 10s.—Three competitors. Mr. J. Cook, Kendal.

SWEEPSTAKES.

Two year old filly.—Two entries. Won by Mr. Edward Gibson.

Three year old bull.—Two entries. Won by Mr. Thos. Scott, of Farlton.

The Chairman proposed "The Successful Candidates."

Mr. Obadiah Burrow returned thanks.

Mr. Ellison also responded to the toast. He congratulated the society on the exhibition of that day, which, though it had not been large, comprised some very superior animals. He thought that the reason why there had not been more stock shown was, because the Milnthorpe meeting took place the last in that district; and the animals which had gained prizes at other places being brought there, the farmers thought that there was no chance for them, and they did not show their stock. There had been a very good show of two-year-old bulls, which reflected credit on that district. The heifers also were very superior, especially the one belonging to Mr. Scott, which would have done to show in any exhibition. He should be very glad to purchase it. He was sorry that Mr. Scott had not put it to a good bull. If that heifer had been shown at Lord Lonsdale's exhibition, its value would not have been less than 40*l.* At Milnthorpe it might fetch 25*l.*—indeed he should be glad to purchase it at that sum. The heifers, on the whole, were superior to those shown the previous year. The cows shown were also very superior animals. In the stock of sheep which had been shown, they had seen what might be effected in their improvement in a short time. Mr. Kendall, who had shown some good specimens, had bought some ewes at one of his sales, which were the beginning of the present stock of the Kendalls. He (Mr. Ellison) had a very fine South-down ram, which he had purchased of the Duke of Richmond, and he crossed him with his Leicester ewes. The result was a breed with superior wool, which also retained the propensity to fatten, which was the peculiar excellence of the Leicester breed. If crossed more than twice that good quality would be lost. It was of the greatest importance that they should produce fine wools in large quantities. Immense quantities were beginning to come from abroad—from Australia and the Continent; and this competition in the home market could not be advantageously sustained unless more attention were paid to the wool of their sheep. The pigs shown were very good; many of them displayed beautiful symmetry. He was so old that he could recollect when pigs had such large ears as to prevent them from seeing, and when they met a gig in the road, they were almost sure to run between the horse's legs. A good shape was of the highest practical importance, for well-shaped animals fattened from less food than inferior kinds. The improvement of the land ought also to be much attended to; more food would be then produced, and more manure would be made. He thought that it would have been better for the government to have given the money which they have spent in promoting emigration, to promote the improvement of the land. However, a great part of those who were gone were people who would not work, and who were better away. He would not throw cold water upon all emigration, for several farmers from the neighbourhood of Greta Bridge had gone to America, with a little money, where they would purchase land and settle down as farmers. *(Applause.)*

The Chairman proposed the "Judges of Stock." He said their duties were not easy, but they had been well performed.

Mr. Newby acknowledged the toast.

The Chairman proposed "Mr. Wilson, of Dallam Tower." *(Three times three.)*

Mr. Wilson congratulated the society upon its prosperity. Its funds were increasing; and the dining-room was full, which he was almost as glad to see as to see their barns full. These meetings were quite to his taste: they brought farmers together, and promoted cordiality of feeling. They had to thank Mr. Ellison for the useful information which he had given them, though he did not agree with him in all things, especially on the subject of emigration. He was sorry to see that a premium to labourers had been withdrawn (given by Mr. Wilson, of Abbot Hall), but he could promise that a similar premium should be forthcoming next year. The labourer was not only worthy of his hire, but also of his reward. They all knew how much they depended on their labourers, of whom it may be truly said, they rise up early and eat the bread of carefulness. He (Mr. Wilson) proposed to give, next year, 2*l.* to the labourer who has brought up the largest family without receiving parochial relief, and 1*l.* to the second on the list. These premiums he would place at the disposal of the committee. *(Applause.)* He would give them as a toast "The Industrious Labourers."

Major Hutton proposed the health of "Mr. Wilson, jun.," of Dallam Tower.

Mr. Wilson said that he was flattered by the manner in which they had drunk his son's health. He hoped that he would follow in the steps of his respected grandfather, and his not disrespected father; and that he would support, to the extent of his power, the agricultural interest.

The Chairman proposed the Vice-chairman and Secretary, "Mr. Hutton."

Mr. Dennison suggested that something should be done to show the gratitude of the society for the valuable and gratuitous services of their worthy secretary.

Mr. Ellison said that if the funds permitted it, both the treasurer and secretary ought to have a piece of plate presented to them.

Mr. Hutton rose and said that though many intermediate speeches had been delivered since, he had not forgot, nor did he fail to appreciate the honour they had done him, by drinking his health and proposing to reward his services in so gratifying a manner. Ever since the commencement of the society, he had exerted himself to the utmost in his power to promote its prosperity, and if they thought proper to testify their sentiments towards him in the manner which had been mentioned, all that he could say was, that it would stimulate him to increased exertions on behalf of the society.

Mr. Ellison proposed that the next meeting of the society should be held on the 26th of September, if it was not upon a Saturday.

The Chairman put Mr. Ellison's proposition to the vote, and it was carried by a large majority.

Mr. Bolland said he rose to propose the health of two gentlemen, who, though they were not members of the society, took an interest in, and were anxious to become acquainted with, the science of agriculture. It was gratifying to know that they had come into the county of Westmoreland as the place where they could best learn that science. One of them had been in Canada, to which place he intended to return, to introduce there the various improvements in the practice of agriculture. He believed that under the able tuition of Mr. Ellison they would both become eminent agriculturists. He begged to propose the health of "the Hon. Frederick Petre and Mr. Vasason."

The Hon. F. Petre and Mr. Vasason both returned thanks.

Mr. Ellison said that he had been called upon by the chairman to propose a toast—"The Royal Agricultural Society of England." Though it had only existed three years, the advantages of the society had already become evident, and there was no doubt but that it benefitted the entire community. All who witnessed the last exhibition of the society, must have seen the great benefits which it was calculated to produce. On the formation of the Royal Agricultural Society, it was a matter of doubt whether it would succeed or not, and whether, if it got established, it would be of any advantage to the country. Mr. Shaw was the first originator of the society, and enlisted in its favour the support of Earl Spencer and the Duke of Richmond; and from that beginning, in the short space of three years it had become so flourishing, that at the late Liverpool meeting, no less than 2,213*l.* had been received from those who had viewed the exhibition. Farmers from all parts of the kingdom and from America were at the meeting, who have been much benefitted by witnessing the fine specimens of stock, and the various improved implements of husbandry, and by hearing the experience of the best farmers. Every man that could afford it should be a member of that society. He hoped the society would flourish, and soon be able to give premiums to the best cultivators of the soil in every county in England. He proposed "Mr. Handley and the Royal Agricultural Society."

The Chairman proposed the health of "The Treasurer, Mr. Whittaker."

Mr. Whittaker returned thanks.

Mr. G. Braithwaite said, that as the bishop had been toasted, he thought that the working clergy ought not to be neglected. He would therefore propose the "Working Clergy."

The Rev. J. Thexton, in acknowledging the toast, said that he had been labouring as a clergyman for the long period of 55 years.

The "Gentlemen connected with the Press who were present," and a variety of other equally appropriate toasts, were given, after which the company separated.

WOODBRIDGE FARMERS' CLUB.

The meeting of this club was held on the 1st inst. The following are extracts from the report of the year's proceedings, which was read :—

A discussion took place on the preservation of the Swedish and the common turnip, and the following resolution was agreed to :—

"That the most effective and economical mode of preserving Swedish turnips is, by putting them into clamps in the field or yard, in a sheltered situation. That they should be perfectly dry when put into the clamp. That the clamps should be protected by straw or thatch, covered with earth, from four to six inches thick. That a free circulation of air should be introduced through the clamp."

The second meeting was held on the 13th of January, 1841, when the latter part of the resolution passed at the previous meeting was amended, and the following clause directed to be substituted :—

"That the clamps be covered in as air-tight a manner as possible, except small apertures or chimneys at the top, to allow free ventilation for the escape of gaseous matter arising from the clamps."

The following resolution was agreed to on the propriety of manuring maiden layers :—

"That it is a good practice, where the land is of fair quality and good condition, to manure maiden layers; but that on light soils, liable to burn, it is questionable, as, in the event of a dry summer, manuring may be worse than useless."

The third meeting was held on the 10th of February, and more books were directed to be purchased for the library.

The subject for discussion was, the varieties of spring corn, and the preparation of land for the same, when the following resolution was agreed upon :—

"That Chevalier barley was best adapted for heavy lands, and Zealand for light lands, and that the quantity sown should be about ten pecks an acre. That long fallows on heavy lands should not be broken up till April or May, but that fallows for root crops should be made immediately after harvest."

The fourth meeting was held on the 10th of March.

Two letters addressed to Dr. Bland, on the utility of oil cake made from barley, oats, beans, or waste wheat, for the purpose of feeding cattle, were read, and the meeting were of opinion that the subject was well worthy of consideration, and thanks were voted to Dr. Bland for the communication. The subject for discussion was the weaning and rearing neat stock, upon which the following resolution was agreed to :—

"That the proper time for weaning was, when the calves were a fortnight old, and that the best method of weaning them was by giving them skim milk with hay, vegetable food, and oil cake, previously to turning them out to grass."

The fifth meeting was held on the 14th April, when the preparation of fallows for vegetable crops was discussed, and the following resolution was agreed to :—

"That it is advisable to fork out spear-grass previously to ploughing. That the stubble should be ploughed in as early as possible after harvest. That the muck should be laid upon the land as early as February, and worked in with the successive fallow ploughings."

The sixth meeting was held on the 5th of May, and the subject for discussion was, the management of the hay crop. The following resolutions were agreed to :—

"That the crop should be cut at the period when the great proportion of the grasses are in full bloom, or rather before that time.

"That in this part of Suffolk the time of mowing was frequently delayed too long.

"That the hay should be quickly made, and frequently stirred and shaken up. That it should be cocked every night, the size of the cocks and the time of carting to be governed by circumstances.

"That it was proper to mix salt with the crop when put into stack. That the quantity should be half or three quarters of a peck of salt to a waggon load of upland hay, and a peck to a load of marsh or lowland hay.

"That, as to clover, it should be cut when in full bloom, and should lay unstirred on the swathe, in fine weather, until nearly ready to cock, then turned in the morning and cocked before night.

"That it was sometimes desirable to let the crop remain on the waggons a day or two previous to stacking, in unfavourable weather.

"That sprinkling with salt, as in the case of grass, was profitable.

"That the operation of haymaking depends so much on the circumstances of weather, &c., that it is difficult to lay down precise rules on the subject."

The seventh meeting took place on the 9th of June. The subject discussed was, the sowing vegetable crops, when it was resolved, that the land should be plentifully manured for all vegetable crops.

The eighth meeting was held on the 7th of July. The subject discussed was, the harvesting of corn, and the resolutions agreed to were, first,

AS TO WHEAT.

"That the scythe has not been extensively used in this neighbourhood, but that those farmers who have used it, are inclined to continue the practice."

"That the bagging hook has been used near Wickham, and approved, and that it is desirable that trials should be made of both these instruments."

"That wheat in this neigbourhood was frequently cut too late."

"That the sheaves should be small."

AS TO BARLEY.

"That it is frequently cut and carried too soon, and in such case 'riding the golf is injurious;' under other circumstances the practice is commendable."

"That this crop should be mown."

AS TO BEANS.

"That it was better to cut than to pull beans. That they were frequently cut or pulled too late, to the injury both of the fodder and the sample."

There was no meeting in August.

The ninth meeting was held on the 8th of September, and was adjourned to the 6th of October.

The tenth meeting was held on the 6th of October, when, on account of the thin attendance of members, the subject for discussion, viz., the feeding of agricultural horses, was postponed to a future meeting.

The meeting then discussed the subject of preparing seed wheat, when the various methods of preparing the seed by salt water, brine, lime, blue vitriol, and arsenic, were entered into, and the following resolution agreed to :—

"That whatever method of steeping be used, the wheat should be dropped into the steep and well stirred, that the smut balls, light kernels, &c., may float, and be removed."

The annual meeting was fixed for the first of November, and a special meeting appointed to lay down regulations for conducting its proceedings.

In presenting this report to the society, it has necessarily been confined to the bare record of the proceedings extracted from the minutes of the secretary. The conclusion at which the members arrived upon the various subjects brought under their notice is only given, and not the chain of reasoning, or the practical detailed experience, which directed them to that conclusion.

The most important subject which has engaged their attention is, the use and application of manures. Whether manure should be applied to crops in a fermented or unfermented state is still a question among even very distinguished agriculturists. Some agree in opinion with the majority of the members of this society, that it should be carted upon the field fresh from the yards, ploughed in, and incorporated with the soil in working the succeeding fallow; while others recommend the placing of dung from the yard between the layers of earth, turning over the heap, and mixing both earth and dung together, so that any gaseous matter which escapes from the dung by fermentation may be blended in the earth with which it is mixed. It is an old adage, "that dung is the mother of gold," yet from the careless manner in which this article is not unfrequently managed, and from the badly-constructed state of some of our farm yards for its preservation, it would appear that we are not duly impressed with the truth of the proverb. It is very desirable that the two methods of management above alluded to should be tested by careful experiment in the same fields, and under circumstances as nearly similar as may be. For, if the plan of carting dung fresh from the yard, and ploughing it in, produces the best crop, it is clearly the most economical, from the great saving of labour both of men and horses, and it is hoped that this short notice may induce some of our members to make the trial.

SOUTH-WEST MIDDLESEX AGRICULTURAL ASSOCIATION.

The fifth annual meeting of this society, instituted for the encouragement of good ploughing, agricultural improvements, and for giving rewards to labourers and servants for good conduct and long service, was held at Hayes on the 8th of October. Notwithstanding the lowering aspect of the weather, and having intermitting showers, the friends and supporters of this admirable society assembled in large numbers on the different grounds where the ploughing matches came off. Fields on the farms of Messrs. C. Newman, D. Wilshin, and J. Hunt, were selected for the exhibition of this rural rivalry.

The ploughs, sixty-five in number, were in the fields at nine o'clock, and commenced operations at ten, which they continued till nearly two o'clock, amidst the general and unqualified admiration of the spectators, many of whom expressed their astonishment at the extraordinary advancement which that portion of husbandry had made during the five brief years of the society's existence. The evenness, precision, and steadiness with which the boys handled the plough and cut the furrows, were truly extraordinary.

The Judges—Messrs. A. Skinner, West Thurrock, Essex; Mr. J. Sharp, Lawrence Waltham, Berks; and Mr. W. White, Tolworth Court, Kingston, Surrey—having taken a close and impartial examination of the fields, retired to compare notes and adjudicate the prizes. In the meantime several implements of husbandry, on the newest and most improved plans, as well as several loads of hay cut in trusses, and other things connected with agriculture, were exhibited in the front of the Adam and Eve hotel, which attracted great interest, and were much praised.

The prizes for the two best bound loads of hay were awarded as follows:—William Finlator, in the employ of Mr. D. Gurney, of Northolt, 2*l.*; Thomas Platford, in the employ of Mr. G. Trumper, Northolt, 1*l.* 10s.

Amongst the parties who honoured the day's ploughing and exhibition were, the Earl of Jersey, Lord Villiers, Sir Francis Burdett, and several ladies of rank and fashion.

The business of examining and adjudicating having concluded, the friends of the society assembled and dined at the Adam and Eve hotel. As there was no room in the hotel sufficently capacious to accommodate the company, a splendid tent was erected on the grounds at the rear of the building. This was done and fitted up under the superintendence of Mr. J. C. Gilbert, who has from the institution of the society attended to its comforts.

Richard Henry Cox, Esq., presided, supported on the right and left by Col. Wood, M.P., Col. T. Wood, M.P., Henry Pownall, Esq., and his two sons, Charles Turner, Esq., J. T. Clark, Esq., the Revs. Messrs. Hale, Hicks, and Trimmer, J. Whiting, Esq., — Pollock, Esq., — Fagg, Esq., (Bedfont), Messrs. Trumper, Newman, Tillyer, Sherborn, Gorby, Gurney, &c. Upwards of 200 other gentlemen influentially connected with the county also sat down to dinner. A long delay took place in the expectation of the arrival of Mr. Byng, but it was with pain ultimately announced that the venerable senator could not attend.

The cloth having been removed, *Non Nobis Domine* was sung in admirable style by Messrs. Stansbury, Green, and Fry, under the direction of Mr. King.

The Chairman then rose, and proposed "The Queen" (*enthusiastic applause*) Nine times nine.

Air, "God save our gracious Queen."

The Chairman next proposed "Prince Albert, and the Princess Royal" (*cheers*). He felt that the Prince had endeared himself to England, and the more so as he had been pleased to turn farmer (*hear and cheers*). That gave him additional claims to their affections (*hear, hear*). The toast was then drunk amidst great enthusiasm.

The Chairman then proposed "The Queen Dowager, and the rest of the Royal Family" (*cheers*).

The Chairman next proposed amidst loud cheers, "The Army and Navy."

Colonel T. Wood could not, as one bearing her Majesty's Commission, as well as having the honour of being connected with the county, but acknowledge the compliment conferred on his profession. They could not forget the brillaint achievements of the members of both services, who were always ready to defend their country and vindicate the cause of the oppressed against the oppressor (*hear*). At that moment they were engaged in distant countries against their enemies: he was satisfied that they would support the national character, and that they would upon all occasions discharge their duty manfully, and with bravery tempered by forbearance (*hear*).

The Chairman then proposed "The Lord Lieutenant, and the Magistrates of the County."

Mr. J. T. Clarke returned thanks in the name of the Lord Lieutenant and his brother magistrates.

The next toast was "the Members of the County" (*cheers*).

Colonel Wood, M P., returned thanks for himself and Mr. Byng. He felt that it was not necessary to apologise for the absence of his hon. colleague, as all were aware of his intention of being present that day, as he always had been on former similar occasions (*hear*). His absence was solely caused by unavoidable necessity. The number, the wealth, and the influence that attended, satisfied him (Col. W.) that the value of the society was fully appreciated. It was not necessary for him to detail the important objects of the society; other societies aimed at higher objects, but from the nature of the locality in which they lived—from the intelligence, the skill, and the capital engaged in the county of Middlesex, it was rendered unnecessary for the society to encourage those scientific pursuits that others were engaged in (*hear*). They directed their energies to more important matters—the improving moral character of the worthy farmer, and the exciting a spirit of emulation in the neighbourhoood. They also informed the men that were engaged in their service that the benefit of their labour would revert to themselves (*hear*). Another important object of the society was the encouragement of aged servants of good character, who had faithfully discharged their duties to their masters, and also the encouragement of others who supported themselves independant of parish relief. Of that latter class he was happy to say that there were several between 70 and 80 years of age, who had thus honourably supported themselves (*hear*). He sincerely hoped that this society, like the oak, that monarch of the forest, would extend to such a size as to shelter all beneath its spreading and luxuriant foliage (*hear*). The youth of the county would, he trusted, imitate their seniors who were that day successful, and thus also at some future period obtain for themselves similar rewards (*hear*). He would upon all occasions attend their meetings, and would ever take every interest in the success of a society so well calculatad to raise the character of the labouring population (*cheers*).

The Chairman rose and said, that he had a toast to give which would be received with pleasure, that was, "the health of the Duke of Northumberland, the noble patron of the society, and success to the South-West Middlesex Agricultural Society"(*cheers*). He was sorry that the task had not fallen into abler hands; but, as no exordium was necessary, he gave it with the greatest pleasure. The society enhanced the moral, the industrial, and the social qualifications of the labouring population. It also united in a strong bond of friendship the landlord, the tenant, and the yeoman (*heur*). The landlord rejoiced in the well-being and prosperity of the tenant, and the latter, having been rewarded for his industry, felt an additional stimulus to labour, the more especially when he was convinced that neither his industry nor his services had been overlooked (*hear*). He also encouraged his children to follow his example, to imitate his industry—to look in their turn for similar rewards as those which he had obtained from this society; and thus they had a bold peasantry, the pride and glory of their country (*cheers*). The toast was drunk with repeated cheers.

At this period the successful competitors for the several prizes were introduced to the chairman, the committee, and company. Their appearance excited the most pleasurable emotions in the breast of all, and drew forth bursts of applause. In addition to the prizes, certificates, neatly glazed and framed, descriptive of the qualification for which the reward was given, were bestowed. Around the written testimonial were figures emblematic of husbandry, &c. These and the certificates were suggested and designed by Mr. J. Gotelee, of Hounslow, the hon. secretary to the society.

The following were the prizes awarded:—

Class 1—.Champion ploughmen.—William Low, in the employ of Mrs. Ann Thatcher, Laleham, 3*l.* 5s.; Thomas Copes, driver.

Class 2.—Ploughs with two horses abreast and reins.—Daniel Cox, in the employ of Mr. Francis Sherborn, Bedfont, 3*l.* 5s.; John Ball, in the employ of Mr. H Turner, Twickenham, 2*l.* 15s.; John Stevenson, in the employ of Mr. R. Stevens, Staines, 2*l.* 5s.; George Minley, in the employ of Mr. Josiah Hunt, Hayes, 1*l.* 15s.; William Churchill, in the employ of Mr. C. Newman, Hayes, 1*l.* 5s.

Class 3.—Ploughs with three horses or oxen, and boys to drive.—Thomas Johnson, in the employ of Mr. C. Newman, 3*l.*; George Curtis, driver. Daniel Gibbs, in the employ of Mr. T. Shackel, Hayes, 2*l.* 10s.; George Timberlake, driver. Richard Chipping, in the employ of Mr. T. Taylor, Kempton-park, 2*l.*; Francis Tomkins, driver. Charles Shirley, in the employ of Mrs. Baxter, Southall Green, 1*l.* 10s.; George Dean, driver. William Young, in the employ of Mr. M. Sherborn, Heston, 1*l.*; John White, driver.

Class 4.—Boys under 18.—Two horses abreast, no driver.—James Cayley, in the employ of Mr. W. Price, Stanwell, 2*l.* 5s. Henry Prestly, in the employ of Messrs. Tillyer, Harmondsworth, 1*l.* 15s. John Brooks, in the employ of Mr. G. Stent, Stanwell, 1*l.* 5s. George Beauchamp, in the employ of Mr. H. Turner, Twickenham, 1*l.* James Reeves, in the employ of Mr. S. Grey, Harmondsworth, 15s.

Class 5.—No competitors.

Class 6.—County challenge, Middlesex against Bucks, for 5 sovs.—Middlesex: James Rosam, in the employ of Mr. M. Sherborn, Heston; Richard Chairs, in the employ of Messrs. Dearle, Laleham, J. Reason, driver; and Thomas Atkins, in the employ of Mrs. Anne Thatcher, Laleham, George Mess, driver.——Bucks: John Barrett, in the employ of Mr. S. Pigott, Iver, Jesse Chouns, driver; Joseph Jackson, in the employ of G. S. Harcourt, Esq., Wyrardisbury: and Jas. Horton, in the employ of Mr. T. Agar, East Burnham, G. Todd, driver. Won by the Middlesex.

The driver of each successful plough received 5s., and each unsuccessful ploughman, 5s. Refreshments were liberally provided on the field for the ploughmen, drivers, and keepers of the ground.

Class 7.—Male Servants, for the longest period of service.—James How, in the employ of Mr. Robert Taylor, of Lampton, 36 years, 3 children; Thomas Price, in the employ of Mr. Jas. Tillyer, of Harmondsworth, 34 years, 5 children; James Neal, in the employ of Mr. William Trumper, of Harefield, 32 years, 8 children; William Batters, in the employ of Mr. John Rayner, of Hatton, 32 years, 4 children; Samuel Pollard, in the employ of Mr. Robert Hawkins, of Southall, 32 years, 8 children; James Goulding, in the employ of Mr. Geo. Trumper, of Norwood, 30 years, 9 children; Thomas Carter, in the employ of Mr. George Tillyer, Feltham, 30 years, 8 children.—2*l.* 10s. each.

Class 8.—Male Servants, for a service of upwards of 20 years, and not exceeding 30.—Michael Bennett, in the employ of Mr. James Tillyer, of Harmondsworth, 30 years, 12 children; Robt. Godding, in the employ of Mr. Isaac Cane, of Colnbrook, 28 years, 3 children; Thomas Smith, in the employ of Mr. Richard B. Tillyer, of Harmondsworth, 28 years, 10 children; James Cooper in the employ of Mr. Robert Taylor, of Lampton, 28 years, 12 children; William Folcher, in the employ of Mr. John Collins, of Sunbury, 27 years, 5 children; William Griffin, in the employ of Mr. William Holgate, of Staines, 26 years, 3 children; John Lockey, in the employ of Henry Weekly, of Harmondsworth, 26 years, 5 children; William Weston, in the employ of Mr. Thos. Merrick, of Ashford, 26 years, 7 children; Wm. Lovell, in the employ of Mr. Daniel Gurney, of Northolt, 25 years, 9 children; Daniel Lewin, in the employ of Mr. Jas. Tillyer, jun., of Harmondsworth, 25 years, 13 children; Joseph Agar, in the employ of Mr. John Sanders, of Shepperton, 25 years, 4 children; Wm. Barringer, in the employ of Mr. Francis Sherborn, of Bedfond, 25 years, 4 children; George Godliman, in the employ of Mr. Daniel Wilshin, of Hayes, 25 years; John Wilson, in the employ of Mr. Henry Jupp, of Brentford, 24 years, 3 children.—2*l*. each.

Class 9.—Male Servants not being hired, for a service of not less than 5 years, or more than 20.—Joseph Myers, in the employ of Mr. Geo. Daws, of Hatton, 20 years, 2 children; Robt. Pooley, in the employ of Mr. Charles Newman, of Hayes, 19 years, 6 children; W. Filbey, in the employ of Mr. G. Trumper, of Norwood, 19 years; John Portsmouth, in the employ of Francis Sherborn, of Bedfont, 19 years, 5 children; George Little, in the employ of Mr. John Cooper, of Sipson, 19 years, 2 children; Joseph Butterfield, in the employ of Mr. Josiah Hunt, of Hayes, 18 years, 6 children; James Chapman, in the employ of Mr. Alfred Welch, of Southall, 18 years and 2 months, 7 children; John Batt, in the employ of Mr. Thomas Shackle, of Hayes, 17 years, 9 children; David Downs, in the employ of Mr. George Fagg, Bedfont, 17 years, 5 children; John Evans, in the employ of Mr. George Tillyer, of Feltham, 17 years, 4 children; James Newell, in the employ of Mr. Matthew Sherborn, of Heston, 17 years, 11 children; Thomas Wooldridge, in the employ of Mr. Isaac Cane, of Colnbrook, 17 years, 5 children; James Hogsflesh, in the employ of Mr. William Hatch, of Hanworb, 17 years, 5 children; Wm. White, in the employ of Mr. John Weekly, of Hayes, 16½ years, 8 children,—1*l*. each.

Class 10.—Single men as hired servants, for a service of 5 years and upwards.—Philip Massey, in the employ of Mr. Wm. Gunner, of Teddington, 17 years; Jeremiah Philpot, in the employ of Mr. Alfred Welch, of Southall, 15 years; Jas. Rosam, in the employ of Mr. Matthew Sherborn, of Heston, 6 years; Henry Court, in the employ of Mr. Thomas Taylor, of Kempton Park, 6 years.—1*l*. 10s. each.

Class 11.—Single men as hired servants, for a service of 3 years and upwards.—Wm. Williams, in the employ of Mr. Wm. Parrott, of Feltham-hill, 4½ years; William Richardson, in the employ of Mr. Daniel Wilshin, of Hayes, 4 years; Robert Trinder, in the employ of Mr. Jas. Ginger, of Stanwell, 4 years; Wm. Cooper, in the employ of Mr. Robt. Taylor, of Lambton, 4 years; Gee Brown, in the employ of Mr. Wm. Trumper, of Harefield, 4 years.—1*l*. each.

Class 12.—No claims.

Class 13.—Lads under 16 years of age, not hired, for a service of 3 years and upwards. Thomas Ashley, in the employ of Mr. Richard B. Tillyer, of Harmondsworth, 8 years; James Chapman, in the employ of Mr. Alfred Welch, of Southall, 6 years; George Williams, in the employ of Mr. Wm. Parrott, of Feltham-hill, 6 years; Thomas Lockey, in the employ of Mr. Henry Weekly, of Harmondsworth, 6 years; Jas. Morris, in the employ of Mr. George Daws, of Hatton, 5 years; Thos. Dell, in the employ of Mr. George Trumper, of Norwood, 5 years; Edmund Bunce, in the employ of Mr. Samuel Jordan, of Stanwell, 4 years; James Jeffrys, in the employ of Mr. Jas. Tillyer, of Harmondsworth, 4 years; Henry Wyatt, in the employ of Mr. Matthew Sherborn, of Heston, 4 years; Benjamin Phillips, in the employ of Mr. Wm. Hatch, of Hanworth, 3½ years.—10s. each.

Class 14.—Shepherds, for the longest period of service, not less than three years.—William Rance, in the employ of Mr. Geo. Daws, of Hatton, 10 years; Robert Hopping, in the employ of Mr. Charles Newman, of Hayes, 5¼ years; John Rance, in the employ of Mr. John Weekly, of Hayes, 5 years.—2*l*. each.

Class 15.—Shepherds for rearing the greatest number of lambs.—Prize not awarded.

Class 16.—Female servants, for the longest period of service.—Ann Neal, in the employ of Mr. William Trumper, of Harefield, 43 years, 3 children; Martha Eldridge, in the employ of Mr. Thomas Wild, of Sipson, 33 years, 8 children; Ann Hammond, in the employ of Mr. Charles Newman, of Hayes, 31 years, 7 children; Elizabeth Bennett, in the employ of Mr. James Tillyer, of Harmondsworth, 29 years, 12 children; Mary Perkins, in the employ of Mr. Matthew Sherborn, of Heston, 29 years, 6 children; Elizabeth Birdseye, in the employ of Mr. Wm. Burr, of Cowley, 25 years, 4 children.—1*l*. 10s. each.

Class 17.—Female hired servants, for the longest period of service.—Mary Kemp, in the employ of Mr. Richard Stevens, of Staines, 22 years; Elizabeth Broom, in the employ of Mr. Michael Robinson, of Heston, 9 years; Sophia Collins, in the employ of Mr. John Rayner, of Hatton, 6 years.—2*l*. 10s. each. Sarah Farley, in the employ of Messrs. C. and R. Dearle, of Laleham, 5 years; Ann Webb, in the employ of Mr. Georgo Trumper, of Norwood, 5 years.—2*l*. each.

Class 18.—Female hired servants, for the longest period of service in their first situations.—Ann Grinham, in the employ of Mrs. Ann Thatcher, of Laleham, 3 years.—2*l*.

The Chairman accompanied each presentation with an appropriate address. To the shepherds, he said, that he hoped that they would prove as faithful shepherds over their own families as they had been of the lambs and sheep committed to their care.

The prizes having been disposed of,

Colonel Wood proposed the "health of their Chairman." After alluding to the patronage agriculture would receive from Prince Albert advocating its pursuits, the gallant colonel said, that the society had the peculiar advantage of bringing them intimately acquainted with the excellent men that were that evening paraded before them. (*Hear.*) It was clear that a fair word went far with the peasantry, especially when accompanied with good usage. Their natural good humour shewed itself upon every occasion, and proved, that they willingly performed any task when kindly asked to do it. The society not only educated good farmers, but also assisted in bringing up a race of men who were always foremost in defending the national character and independence of the country. (*Hear.*) He had introduced into the county a man who had lived fifty years with his (Col. W.'s) family, and was gratified to find that his son was one of the su cessful candidates. *(Hear.)* When that man ascertained that his son had won the prize, he observed, "Oh, I am glad of it; but I think that twenty years ago I could beat him." *(Laughter.)* He (Col. W.) hoped that the spirit of emulation would spread itself, and that at the next meeting the number of ploughs would be doubled. Such a society as this rendered life valuable to the peasant —made him look upon himself with self-respect and pride, and would, with the assistance of other kindred operations, leave this country an example and pattern for other nations. *(Cheers.)* The toast was drunk with full honours.

The Chairman, having acknowledge the honour, passed a high eulogium upon Henry Pownall, Esq., and proposed that gentleman's health. *(Great cheering.)*

Mr. Pownall returned thanks, and said, that they were indebted to the Committee, Treasurer, and Secretary, whose labours were pre-eminently calculated to carry so efficiently and successfully into effect the objects of the society. *(Hear.)* In saying so, he spoke the sentiments of the other Vice-Presidents. *(Hear.)* If agricultural associations had one advantage more than another, it was their sociability, which bound them together in the closest links of friendship. They also brought them in connexion with a most useful class of men, who were always grateful for the slightest sympathy evinced towards them, and who invariably acknowledged the kind attention of the employers, as was evinced by one of them who had just left the room, exclaiming "I thank my master for recommending me." *(Hear.)* It was encouraging to those men to feel that in sickness or in age they would not be deserted by their masters. Even on the youth the rewards bestowed by this society must have the best effects, and must endear them to their parents, who will press their children closer to their bosoms, and give them a warmer kiss because they appeared well before their masters. *(Hear.)* Who could have witnessed the proceedings of that day without admiring the intelligence, the good order, and respectability of the several classes that made their appearance? As a proof of the superior skill and knowledge of the English farmer, he would mention one circumstance —"A blade of wheat was found in a mummy that had been buried upwards of 2,000 years." That blade he shewed to Mr. Sherborn, who immediately declared "that it was of Egyptian growth." That was a proof of the accurate knowledge and superior information of the English farmer. *(Hear.)* Mr. Pownall concluded a most eloquent address, in which he pourtrayed in glowing colours the noble characteristics of our peasantry, the mutual link that binds them and the upper classes together, and the necessity that existed for cultivating their virtues, and proving to them that they are of importance in society. During his able and effective address he was loudly and repeatedly cheered.

Mr. C. N. Newdigate proposed "the health of Messrs. A. Skinner, J. Sharpe, and W. White, the Judges." *(Cheers.)*

Those gentlemen severally returned thanks.

The Chairman proposed "the Agricultural Associations of Bucks, Berks, Surrey, and Essex."

Messrs. Barrett, Sharpe, White, and Skinner returned thanks as representatives of those associations.

The "health of J. Whiting, Esq., Treasurer," was received with acclamation.

Mr. Whiting acknowledged the honour, and stated that the balance from the last year was 10*l.*; that the subscriptions for 1841 were 292*l.*; that the funded property exceeded 230*l.* Three per Cents.; that 110*l.* had been that day distributed amongst the industrious well-conducted male and female farm servants, and 54*l.* amongst the successful ploughmen; and concluded by hoping that the subscriptions would annually increase, and the society long continue to flourish. *(Cheers.)*

The "Health of the Committee" was drunk with usual honours.

Mr. M. Sherboure, and Mr. Trumper returned thanks.

The "Health of Mr. Gotelee, hon. secretary," was most warmly responded to.

Mr. Gotelee said, that they imposed upon him a task which he regretted that he was unable to perform, that of returning thanks in adequate terms for so distinguished an honour as they had just conferred upon him. He felt deeply grateful for the kind manner in which his health had been proposed and received, and expressed his acknowledgments of the proof then given of their renewed confidence in him, assuring the society that so long as he held the honourable office as Secretary to so admirable a society, his humble services would be always at their command, and be his constant endeavour to discharge the duties required of him cheerfully, and with the greatest possible accuracy and expedition, being deeply sensible of the obligations which it imposed by a faithful and zealous discharge of those duties. *(Hear, hear.)*

The "healths of Messrs. Newman, Wilshin, and Hunt," the gentlemen on whose farms the Ploughing Matches took place, were received with marked honour.

Mr. Newman returned thanks for himself and the other two gentlemen, whom illness prevented being present.

The Chairman proposed "The Church and the Clergymen who honoured the society with their presence." *(Cheers.)*

The Rev. Mr. Hale returned thanks.

The "Yeomen of the County" were toasted amidst great cheering.

Mr. James Tillyer returned thanks.

Colonel Wood proposed "The health of Mrs. Byng and the Ladies of Middlesex." *(Cheers.)*

The "healths of the English landlords and English tenants" were most enthusiastically received.

Messrs. Tillyer and Clarke returned thanks.

This closed the festivities of the evening, which were prolonged to a very late hour.

It is gratifying to state, that, notwithstanding the immense concourse of agricultural labourers that assembled on the occasion, there was not the slightest interruption of the public peace. On the contrary, their only and chief object appeared to be that of acknowledging their gratitude to the society by their sober, peaceable, and orderly conduct.

ON THE IMPROVEMENTS IN CULTIVATION.

At the meeting of the Wokingham Agricultural Society, W. Houghton gave some practical hints relative to the cultivation of the soils, and to farming in general, observing, that a due attention to his land was the first duty of a farmer, for, although he knew that all soils were not alike productive, yet most of them could be greatly improved. His first recommendations were to plough deep, drain the land, and weed the hedge-rows, and if they found its stomach a little out of order, they must then apply a dose of chalk. (*Laughter.*) And he did hope, if proper attention were paid to these three requisites, that that land which he now saw, in many parts, quite sterile and barren, would some day be made fertile and productive. (*Hear.*) It was the duty of the landlords of the country to assist their tenants, the farmers, in effecting these improvements, or otherwise they could never be accomplished. (*Cheers.*) Mr. H. concluded by charging agents generally with an insufficient performance of their duties, which, instead of ending with the mere collection of rents, &c., ought to be extended to a constant observation of those improvements necessary to the prosperity of agriculture, and an anxious desire to see them carried into execution.

P. Pusey, Esq., M.P., in allusion to Mr. Houghton's recommendation relative to the necessity of weeding the hedge-rows, remarked, that, in his part of the county, they did not cut away the weeds from the hedge-rows, but they did away with the hedge-rows altogether—(*laughter*)—being convinced of their perfect inutility. He considered that they did more harm than good, and he thought if the trees the elms and the oaks, so numerous in this district—were levelled, it would be much better for the crops, which must be injured by their shade, their profusion of leaves, &c. (*Hear, hear.*)

At the meeting of the North Derbyshire Agricultural Society, Mr. Stevenson, the Chairman, said —I consider that good farming is of the greatest importance to the nation, and that with good management, the soil of England may be made to double its produce. Supposing the average rent of the land to be at the present time 1*l.* per acre, and that by the improvements of which the soil is capable, it were made worth 30s.; what an increased value this would give to the nation—and in my opinion it would entirely do away with the necessity of importing any corn from abroad. (*Hear, hear.*) I never interfere with politics; but I cannot help giving it as my opinion, that the soil is capable of freeing England from all its difficulties, by proper treatment; and I do hope that agriculturists will see the absolute necessity there is of paying proper attention to the cultivation of the soil. When I look at the wide field that is before the farmer, I scarcely know where to begin with my observations upon it. Is not all the clothing and covering for our bodies produced from the farmer? The fleeces of the flocks supply the greater part: and here I cannot proceed without noticing the extraordinary change effected in the skins of the fine bullocks after the animals are killed to supply our bodily wants. After the skins have been taken from the animal, and the animal matter in them in full vigour, they are brought into contact with the vegetable matter contained in the bark of the oak, producing the substance called leather, which is used for a variety of purposes conducive to our comfort. It may be said that cotton is not produced by the farmer; I admit that it is not by the *British* farmer, but it is from the *foreign* farmer who cultivates the cotton tree, in a climate more congenial than our own. Let us now for a moment consider how silk—the finest of all coverings, producing the beautiful dresses of the fair sex—is produced, the mode of which is most extraordinary. The elements of the atmosphere combine to form the mulberry tree, on the leaves of which the silkworm feeds. When this little creature first leaves the egg, which is only about the size of a pin's head, it commences feeding upon the mulberry leaf, until arriving at maturity, the natural spinning-jennies are perfected in its head. It now commences spinning the substance which the leaf of the mulberry-tree had supplied, combined with the other elements of the atmosphere (inhaling and exhaling), and the beautiful silk in its raw state is the result of this beautiful natural manufactory. This too is the production of the farmer; but from the unfavourable nature of our climate we cannot produce them as an article of commerce. I may just remark, that at different temperatures all bodies compound and decompound; and you will be surprised at the statement I am about to make, but it is nevertheless true, that we are now making ropes from stones—a discovery which must be of great advantage to the nation. I will explain how this is done. You are all aware that we make iron from stone; when the stone is put into the furnace, all the impure parts are discharged by the high temperature to which it is subjected, and the iron runs out by itself: passing then through a variety of processes, it is at last formed into wire. From the wire the ropes are made, and are answering every purpose to which they have been put, most admirably. I am afraid that I am deviating somewhat from the proper course in making these observations, but they are intended to show the wonderful effects of change of temperature (*applause, and* "*go on!*") I will now return to the soil. The turnip and the potato are productions which have not been long known in this country. They have now become of immense value to the nation, and if we were now deprived of them I know not what our condition would be. I must be allowed to say that the management of turnips in Derbyshire is far inferior to that of many parts of England, but I trust that these meetings will be the means of improving its cultivation. My idea is that both turnips and potatoes should be set so far apart that their leaves do not touch each other, that a free ventilation may be carried through amongst them, that they should be considerably above the furrows to admit of this, so much so that a hare might run up the furrows without touching the leaves. Let us enquire for a moment how potatoes and turnips are fed. The decomposing manure in the soil is mixing with the moisture, when the rays of light descend, and there should always be free access between the rows of the turnips for the rays to reach the soil. The heat penetrates the soil, and immediately disturbs the nutritive matter, forming an amalgamation with the watery particles. Evaporation now begins, forming into small invisible globes. The heat in the interior enables these globes to rise like little balloons, in great numbers, each carrying its load of nutritious matter, like the bee returning to his hive laden with honey. The underside of the turnip leaf is full of absorbing vessels, which are always ready to receive the food brought to them as I have described. In these vessels the milk is prepared and poured down into the bulb, its whole substance being, as I believe, derived from this source only, while the roots act merely as a discharger of the excrement of the plant. It is well known that wheat does not grow upon the same land year after year, without destroying itself. This I believe to arise from its own excrements acting in a great measure as a poison to itself. I know it is believed that the roots penetrate a long way into the ground, but I consider this to be a mere slime or excrement, carried into the ground, and acted upon by the electrical fluid, which is carried through the plant as soon as the ear is formed. A free ventilation is as much required amongst the growing wheat as it is amongst the turnips and potato. I will now offer you my views upon draining, from which practice the greatest benefit is to be derived. I have before stated that bodies compound and decompound at different temperatures, and unless the temperature suit the constitution of the plant, it will not vegetate. The great advantage of draining is, that you form a reservoir in the ground, to equalize the supply of heat to the plants. I shall suppose the soil of a district to be four or six inches thick with a substratum of clay, and before draining covered with water; the rays of light descending upon this part, evaporation commences, as I have described to you. The heat which, had the soil been drained, would have nourished the plant, is all carried back into the atmosphere, and of course no vegetation of any value can go on. Were the same district drained twelve or eighteen inches deep from the surface, the rays of heat would descend upon the soil prepared to absorb them. A shower of rain falling upon it, an amalgamation takes place between it and the heat contained in the soil, and before it has time to re-operate it is conducted into the drain, the sides which absorb the heat, and when the water comes out of the drain it is as cold as spring water, having left all its heat in the ground. In the former case, where we supposed that there was no drainage, the hot days of the spring give vigour to the plants during the day only, while during the cold night, having no reservoir to supply them, their blood is chilled, and of course no beneficial crop could be raised; while, in the case where draining has been done, there is a reservoir of heat ready to prevent the chilling action taking place, and a good crop is almost certain to be insured. I am quite satisfied that if the draining system were carried out throughout England, upon all the soils that require it, the most beneficial effects would follow (*hear, hear*). I fear, gentlemen, I am tiring you. ("*No, no!*" and "*Go on.*") Well, one word on the character of animal stock, and I have done, though I am far from having exhausted the subject, but I fear to take up any more of your time. I believe that it has been found by practice, that the most approved stock for feeding is that whose mechanical formation is such as to bring the joints—the top of the shoulder, the ribs, the back and hip joints, as nearly upon a level as possible. An animal of this figure will always be found to carry the flesh with the greatest ease to itself; the muscles of the upper part of the body being relieved of the weight, which if the joints were uneven, would press unequally upon them. And all animals for feeding fat, with the least possible food, should be short-legged, deep-chested, with a light head and neck. The hack horse should have a light head, high neck, shoulder well back, so as to throw the rider on to the more muscular part of the body.

TURNIPS.

At the late meeting of the Shropshire Agricultural Society, Mr. J. **Moire** was highly gratified at his success, more particularly as the method he had adopted for raising his turnips was a novel, and had turned out a very successful one. The ground on which his turnips were raised was a very strong stiff soil, and he had ridged it up and manured it in the autumn, at which season there was some spare time, and leisure to see the thing set about properly. The field on which the turnips was grown was, as he had said, a very stiff retentive soil, and in the month of November he had caused it to be ridged up, and laid the manure upon it, for his ensuing crop of turnips. One part of the field was very wet, but he was rejoiced to say, that no difference was to be perceived between that and the dryer part of the field, the produce being equal; and he had the authority of Mr. Oatley, for stating that it was such a produce as he, experienced farmer as he was, had never seen before. (*Great cheering.*) He therefore felt bound to recommend to his brother farmers, who had similar soils under cultivation, to manure their lands in the autumn, instead of following the present system.

Mr. **Ormsby Gore** said, that had the society done nothing else than given publicity to the method by which Mr. Moire had succeeded in raising a prodigious crop of turnips, in such a season, by laying his manure on the land in the autumn instead of the spring, it had thereby sufficiently rewarded its friends for their anxious efforts for its success, and might claim a high place among agricultural societies, for disseminating so important and valuable a discovery. (*Hear, hear.*) He (Mr. Gore) had tried the experiment with potatoes, and had found it vastly more advantageous to lay the manure on the land intended for such a crop in the autumn, instead of laying the sets on the fresh manure in spring, as was the usual practice.

Mr. **Oatley** said, it was vexatious to think, that in a county such as Shropshire, there were only two competitors for a prize for a production in which at least one-half of the farmers of the county were engaged. (*Hear, hear.*) The successful candidate in this exhibition had produced a field of turnips such as he never before beheld, and by a new process, which, to the farmer of strong heavy lands, was an invaluable discovery.

Mr. **Bythell** remarked that there would have been competitors for the premium offered for the best cultivated farm, and more than two for that given for the turnips, but several members had neglected giving notice in time according to the rules of the society, and it so happened that all who were thus late possessed the best crops.

ON THE BENEFICIAL EFFECTS OF DRAINING LAND,

AND ON LEGISLATIVE ENACTMENTS FACILITATING THAT OPERATION.

At the meeting of the Ashton Agricultural Society, Mr. **Wilson Ffrance** said, he remembered having made a few observations at the last year's meeting, in the course of which he briefly drew attention to two bills then before parliament, one of which related to the draining of entailed estates, the other to drainage generally. He himself belonged to that class of persons whom the former measure was intended to serve, and he had now great pleasure in saying that the bill brought in by Mr. Pusey was now become an act of parliament, and he, a tenant for life, was now enabled to undertake improvements on his estate, which he was well convinced would be for the permanent advantage of the soil, the money expended in which he would be allowed to charge on all or on any part of the land drained, or any other part of his lands, on condition that the money advanced for such purpose with interest thereon, not exceeding five per cent., is paid off by equal yearly instalments of not less than twelve nor more than eighteen, as may be determined either by the Court of Exchequer or Chancery; and also that the annual value of the lands drained is increased thereby to the amount of seven per cent. With respect to this latter proviso, he should have no hesitation in assuring the judges in Chancery, that his lands would not only be increased seven but fourteen per cent. in value by such draining, so that he might feel quite justified in borrowing money to proceed with improvements that were so much needed. The other bill was a general one for drains, which had not yet passed, for this reason, as he believed, that the clerks of parliament had taken fright at the probable decrease which it seemed likely to make in their fees, an objection had therefore been raised which had retarded its progress through the house. He had, however, good reason to hope that such a measure would pass at no distant period, as Lord Stanley and Sir James Graham had expressed themselves in its favour, and they were both in a position to give it the most efficient support, whether it may be introduced by a private member or made a government one, which latter Mr. Handley, the author of the bill, thought it necessary to become in order to insure its success. This general bill is intended to enable commissioners to be appointed, who, on certain conditions, will have power to enter on lands, and compel the formation of main drains, so as to afford a sufficient outlet of the water drained from lands, which from being in inner and confined situations, are at present most seriously injured by the want of such outlet, so that obstinate landlords and tenants will not be allowed to indulge their selfish feelings at the inconvenience and cost of their injured neighbours. In connection with the advantages to be derived from the surface-water being carried off, and the effectual draining of land, Mr. W. F. read an extract from a lecture delivered by Johnson, of Durham University, wherein it was stated, "the ascent of water, in the form of vapour, permits the soil to dry, and fits it for the labours of the husbandman, while its descent in dew refreshes the plant, exhausted by the heat and excitement of a long summer's day. But the same tendency in vapour gives rise to the cold unproductive character in lands in which water is present in too great excess. This character we are familiar with in what are called cold clay soils. Now, whenever water is converted into vapour, the ascending vapour carries off much heat along with it. Let water evaporate in the open air from a stone, a leaf, or a field, it must take heat with it from these subjects, and the surface of the stone, the leaf, or the field must become colder. That stone or leaf also must become coldest, from which the largest quantity of vapour rises. Now, let two adjoining fields be wet or moist in different degrees, that which is wettest will almost at all times give off the largest quantity of vapour, and will therefore be the coldest. Let spring arrive, and the genial sun will gently warm the earth on the surface of the one, while the water in the other will swallow up the heating rays, and cause them to re-ascend in the watery vapour. Let summer come, and while the soil of one field rises at mid-day to perhaps 100 deg. F. or upwards, that of the other may, in ordinary seasons, rarely reach 80 deg. or 90 deg., in wet seasons may not even attain to this temperature, and only in long droughts will derive the full benefit of the solar rays. What, then, is the cause of the coldness and poverty, the fickleness and uncertainty of produce, in land of the kind now alluded to? It is the presence of too much water. What is the remedy? A removal of the excess of water. And how? By effectual drainage."

Mr. Fair said he felt regret, on hearing the report read, that there were so few claimants for the draining premium, on which important subject he would mention a fact connected with the Lytham society, viz., that in the first year of its operations there were only 50 rods drained, while in the last there were no less than 52 miles (*cheers*). With respect to the terms on which draining should be undertaken, he thought it highly proper that the landlord and tenant should join. His own experience of Lancashire tenants had long ago convinced him that they were willing to avail themselves of any advantages which their landlords held out. In his own neighbourhood he had undertaken and completed a great drainage, one by which 2,000 acres were laid dry, but from which 3,000 acres will derive the most beneficial effects. Since this had been done one of the tenants had expressed a wish to have a branch drain, for which he was willing to pay 20 per cent. on the cost of the outlay, with which offer he had closed; and if any landlord had opposed such a proposition, he would have evinced a great indifference to his own interest.

Mr. Almond wished to say a word or two on draining, in consequence of the observations made by the chairman at an earlier stage of the proceedings. It appeared then that the chairman's neighbourhood offered every facility for procuring stones, he would therefore recommend him to use them, and on no account to delay commencing his improvements under the expectation of being able to accommodate himself with turf instead, for although turves might answer all necessary purposes in lands in Mr. Wilson Ffrance's neighbourhood, they would by no means be so eligible in the higher lands in Bleasdale; neither did he believe that they would be as durable in any situation. Mr. A. then gave a brief but very interesting account of the manner in which he carried on his draining operations on a farm belonging to Mr. Cunliffe, where stone was plentiful, viz., by the use of a moveable iron tram road, which two lads were able to place in any required situation, and along which a pony was able to take two tons of stones to the drains, and return with two tons of clay, which was afterwards made into bricks. He also mentioned another profitable purpose to which he had applied stone, that of using it as a covering instead of slate for five sheds which he had erected; he had indeed not only dispensed with slate but wood also, by making the roofs to be composed of arches.

ON THE BEST MODE OF GROWING LUCERNE—INOCULATING LAND FOR GRASS.

ABSTRACT OF THE PROCEEDINGS AT THE LATE MEETING OF THE ROCHFORD AGRICULTURAL SOCIETY.

The President said, Mr. Samuel Baker had begun a discussion in a private way, relative to the best mode of cultivating lucerne, whether it ought to be sown broadcast or drilled—whether hoed or harrowed. He, therefore, thought that if Mr. Baker would state his opinions upon that subject, it might elicit the remarks of other gentlemen, and they might all go home the wiser (*hear and applause*).

Mr. Baker, in obedience to his Lordship's request, said that he was greatly in favour of the cultivation of lucerne. Most gentlemen present knew a four-acre field of his bearing a crop of that plant: it was sown about four years since. The first year he had two crops, but he could not say they were good; yet for the last three years he had had sufficient off those four acres for the keep of from 14 to 17 horses: and this year he had kept 17 horses upon it from the 3rd May to the present time. His plan was to sow broad-cast, and after the crop was mowed to turn his horses into the field to feed it down close. The next field to that was turnips, and his sheep were frequently transferred from thence and folded in the lucerne; after that he had harrowed it well with crab harrows. In the latter end of February or the beginning of March he covered over half of each stetch with manure, but the difference of the crop upon the land so treated was not apparent from any great distance; but upon going into it it was found to have a much higher swarth than on the other part of the stetch. The plants must not be harrowed in frosty weather; he knew a gentleman who lost his whole crop by taking that step one severe morning. He (Mr. Baker) never hoed, but merely harrowed it, and if any gentleman would show a better result than that by drilling, he should be most happy to hear it (*hear and applause*).

Mr. RICHMOND said, he believed he could bear full testimony to the preference of the broad-cast sowing, to that of drilling.

A gentleman here enquired of Mr. Baker whether he had sown upon a bottom or not.

Mr. BAKER.—Without a bottom. He then added that one great reason why lucerne should not be hoed was, because in wet seasons it became more gritty than by harrowing, and the horses did not like it then.

The PRESIDENT said there was one point that wanted to be settled—namely, whether it was desirable to kill the grass crop before sowing the lucerne? He knew a person who thought of sowing white clover with it to get a bottom. The old system had certainly been to sow on a bottom, and then to hoe it, and keep the rows clean; and in some cases in the winter time, sheep were folded upon it in order to get a good bottom of white clover. That was a question which ought to be decided, because sowing lucerne without a crop, was totally opposed to the old practice.

Mr. WOOD said, not being so extensive a farmer as Mr. Baker, it might appear presumptuous in him to offer an opinion upon the subject before the meeting. He had a little hand in the cultivation of the field of lucerne which had been referred to by that gentleman; but he had omitted one circumstance attendant upon harrowing lucerne. To effect that properly the land must be dry, and he apprehended it would be attended with injury to the plant to do it at any other time. For his own part he had never found that anything done to lucerne after October benefitted it. He had tried it in broad-cast and drilling, and by spade digging, and had sown it with land without a bottom; but in the latter respect he never noticed any material difference in the crops. The lucerne was a native of dry soils, and the best crops had been on heavy lands. Another point he would remark—there could not be a better system than laying down land and sowing it with lucerne; because it afforded a protection to the younger grass, and he preferred that plan to inoculation. Mr. Wood then said a few words upon the white carrot. He never saw a crop grown in those parts, but there was another root which ought in his opinion to be more cultivated than it was—he preferred to parsnips. The only crop he had seen was upon a farm at Prittlewell. An advantage might be gained by their growth, because the parsnip was not subject to the fly, whereas carrots were often materially affected by it, and parsnips were a root which could stand through the winter without any injury. For pigs and milch cows they were admirable food. Mr. Wood concluded by adding that he had derived the major part of his experience in farming from his neighbours, and being an occupier upon a small scale only, he could not engage in any very extensive experiments; but such improvements as fell within his observation, he was always happy to communicate (*loud applause*).

Mr. D. BAKER said, Mr. Wood's opinion appeared to be that no good was done to lucerne after October, unless the season were very dry. He could only say that he never harrowed his lucerne until after he had done sowing wheat, and, of course, did it in dry weather if he was able; and he felt convinced that if it was worked and harrowed well in the first instance, the root of the plant took no injury. With respect to inoculation he would say, that if he wanted to lay down a permanent pasture, notwithstanding all that had been advanced in favour of lucerne, give him inoculation. If they wanted proof he had land to show it: and he would recommend any one who wanted a good permanent pasture, to work the land well.

A gentleman enquired how soon a swath was obtained; to which Mr. Baker replied—the next year.

Mr. C. C. PARKER said he had carried out the plan of inoculation every year for a considerable length of time. This year, the season being wet, he inoculated in the spring time, and fed it down in the summer. Mr. Baker might call him extravagant, because more earth was brought upon the land than might be considered necessary. He had for the most part done so upon poor pasture, and he considered that he could not carry a better manure upon that land than 25 or 30 loads of rich old pasture land (*hear and applause*). The first piece he inoculated was from the recommendation of Mr. Baker's brother. The year following it was in hay; he took a gentleman from Sussex into the field, and asked him if he could point out the difference in the crop between that grown upon the poor land which had been inoculated, and that upon what was good pasture; and he declared he could see no difference in the size of the cocks, or in the distance at which they stood from each other. He took pains to inoculate from the very best pastures; and that plan he had pursued every year with much success (*hear, hear*). The main inducement for his doing so was the scarcity of pasture in his neighbourhood, and he acted upon this principle, that in a farm of 80 acres, 20 acres might be made pasture, and still leave sufficient (considering the extent of the occupation) for growing corn; that was the reason why farms with the most pasture generally brought the highest rents. He had now a piece of lucerne which he had mowed four times, and was now feeding it off.

A gentleman enquired the description of soil.

MR. PARKER replied that it was a very heavy soil. He was of opinion that small seeds could not be buried too fleet. He had forgotten to mention at Witham that he had sown two fields with lucerne, without crops, and he had mowed two acres of it. Another field he sowed with a crop of oats to shield the lucerne. That year he could not speak much in favour of the lucerne, but he had a crop of ten acres of oats yielding from seven to eight quarters per acre; and at the same time the lucerne plants were in good condition. *(Much applause).* This year he tried the same plan with a crop of tares, and the quantity of oats used did not exceed a quarter. His bailiff told him something must be done with that field as the tares had been eaten off by slugs; he found such to be the case. However, as the oats looked exceedingly well, he let them remain and kept the tares for a crop. He left six acres in that manner, and the straw of the oats was more like reeds than an oat stalk; he had forty-two quarters of the best oats he could grow off those six acres.

An inquiry was made as to the time at which the oats were put in, when Mr. Parker replied that it was early in February.

Mr. Wood said he did not wish to deprecate Mr. Baker's system, for he had seen his crops, and could bear him out in his statements; he believed that if he (Mr. W.) took the trouble he might do the same upon his land; and no doubt it paid him well in the result, because he endeavoured to get good pasture and succeeded. Mr. Parker had spoken greatly in favour of the system of inoculation, as the best means of procuring good permanent pasture; but it was a system favourable to the cultivation of grass only. He had seen lucerne sown in August, but he would wager the first frost would cut it all off.

Mr. Bramston said—Gentlemen, in speaking of the inoculation of pasture, had omitted to notice one point, namely, whether by removing the turf any injury was sustained by the land from which it was taken? He could state from personal experience that it was rather a benefit to the land; he had tested it, and the grass in that part of the field was equally productive with that which had had no turf taken from it. *(Much applause).* He sincerely thanked them for the compliment they had paid him.

Mr. Parker said, he could bear testimony to the fact to which Mr. Bramston last adverted; but he was aware that much prejudice existed upon the subject. Mr. Parker offered some further observations respecting the culture of lucerne, tending to show that although the crop for the first year might appear unfavourable, yet by proper working it would afterwards thrive remarkably well. He had considerable doubts as to a crop he sowed in the spring of 1840, which came up very weak, and thought it necessary to try some experiment; he accordingly fed it off, and folded sheep in it until it came to be a very superior crop. Therefore, gentlemen must not be discouraged because it did not always look well at the first. *(Hear, hear)*

ON THE APPLICATION OF STEAM-POWER TO AGRICULTURAL PURPOSES.

At the late meeting of the Dengie Hundred Agricultural Society, Mr. Bentall spoke at some length of a recent improvement he had introduced into his plough. He also expressed a strong desire to see the steam-engine introduced into farming operations. He was confident a great saving of expense would be by that means effected. Within the last twelve months he had had an engine of four-horse power in his manufactory, and could state from a reference to his entries, that it did not cost him upon an average seven shillings for four days' fuel. Nor was it requisite that the person attending it should be a professed engineer. It was of the simplest construction, and not liable to get out of repair. He was sure by that means there would be a considerable saving to the farmer in thrashing his wheat, splitting beans, and various other operations, to which steam power might be applied. With reference to the chairman's observations, as to getting rid of the superfluous water now upon the land, he could only suggest a remedy in the steam-plough, but he feared the farmers of Dengie Hundred would not be very ready to adopt it. Mr. Bentall also expressed a desire to see the labouring community more educated in mechanical sciences, so as to fit them for the management of the steam-engine, and other machinery which might be advantageously employed upon farms.

THE MOST PROFITABLE BREED OF SHEEP.

At the meeting of the Braintree and Bocking Agricultural Society, Mr. W. Hobbs said he had been a successful competitor only in a secondary character, and must be content to remain so until the stock was tested by the scales, and when that should be the case he did not care with whom he had to compete. *(Applause.)* He felt proud of the stock he had exhibited—they were certainly not the handsomest; but those sheep were most handsome in his eyes that had fetched the best price, with the least expense in feeding. He had tried various breeds of sheep, but to Kents he gave a decided preference; if, however, any gentleman present could tell him of a better sort he would give them a trial, although he might have to pay a heavy price for them.

The Chairman enquired of Mr. Hobbs whether his Kents thrived best upon ordinary or artificial food?

Mr. Hobbs replied that he did not care how they were fed; and added, that it was the opinion of gentlemen that Kents could not work upon ploughed land; he could only state that he put some upon ploughed land in the month of September, and kept them there until March, and then carried out as many shorned lambs as had been weaned from the ewes; which was a pretty good proof of the strength of their constitution. *(Cheers.)* He had heard the quality of the Kent mutton deprecated; in his opinion it was superior to most of the long-wools; and butchers at the west end of London would give a halfpenny per pound more for them than for any other long-woolled sheep. There certainly was not so much fat to waste in the drippingpan, but there was a greater portion of lean to make up for it.

PRESENTATION OF PLATE TO MR. FOWLER, SECRETARY OF THE HEREFORD AGRICULTURAL SOCIETY.

At the late meeting the suite of plate for the secretary, was placed before the chairman amidst loud cheers. It consisted of a splendid tea and coffee service, elegantly chased, with two dozen tea spoons of a very beautiful pattern.

The Chairman rose and said—"Gentlemen, a peculiarly happy task imposes itself upon me at this time, in awarding the prize before me to one whom you all esteem and applaud for his excellent and valuable services, rendered during a period of several years gratuitously, as secretary to this society. *(Cheers.)* I will now read to you the inscription around this handsome service of plate:—

"Presented to Mr. FOWLER, by the Members of the Herefordshire Agricultural Society, and other friends, for his very valuable services as Secretary of that Institution, and as a mark of the general esteem and regard entertained for him.—October, 1841."

(*Loud applause.*) When it was proposed that the members of this association should present Mr. Fowler with a substantial mark of respect, his other friends, not members of this society, begged to be allowed to avail themselves of the opportunity of testifying their regard for him by entering their names on the subscription list also. (*Hear, hear, and cheers.*) I am sure you will all unite with me in saying, that the prize is bestowed upon one who highly deserves it. (*Great applause.*) I need not add more—the breast and feelings of every one who knows Mr. Fowler will second the words I have expressed. (Sir Hungerford then presented the plate to Mr. Fowler amidst loud and long continued applause.)

Mr. FOWLER rose to address the company amidst renewed applause, and said—Sir Hungerford and Gentlemen, I beg to offer my sincere and heartfelt thanks for the munificent present, the kind and flattering testimonial. Conscious as I cannot but feel of my unworthiness of so great an honour, I fear I shall but very imperfectly express how highly I appreciate your kindness—how much I value your good opinion. (*Hear, hear.*) I must however consider this generous act of the subscribers as one not merely personal, but of complete approbation of the objects of this society—objects on which it would now ill become me to dilate in the presence of so many who from their station, their talents, and their knowledge of agricultural pursuits, are so much more competent than myself to address you. Yes, gentlemen, we may rejoice that in whatever county these societies exist, there are always to be found many among the noble and the rich, ever ready to come forward, and who consider their time well employed in assisting to give effect to their intentions and objects. (*Cheers.*) For myself, gentlemen, I can only again proffer my warmest thanks to all to whom I am indebted for this high honour; you will not I am sure believe those thanks the less sincere because that they are brief. (*Hear, hear.*) No language that I can command, could adequately convey the deep feeling of gratitude with which I receive this splendid present, and with which I shall ever remember your kindness. (Mr. Fowler resumed his seat amid the hearty plaudits of the whole company.)

SUBSOIL PLOUGHING.

At the late meeting of the Shropshire Agricultural Society, Mr. JOHN A. LLOYD apologised for the absence of the Hon. Robert Clive, which was unavoidable, but he had forwarded the result of his experiments in subsoil ploughing, which he had pursued to a considerable extent, and with great success. Mr. Lloyd handed in a paper to the Secretary, which was as follows :—

Prior's Halton, 1st *October*, 1841.

SIR,—As the harvest upon the Pole Farm has been completed nearly a fortnight, I beg leave to give you some account of the crops from the land which has been thorough-drained and subsoiled; and I will endeavour to be concise in giving you the account of the crops under their separate heads.

First, the quantity of land now thorough-drained and subsoiled is upwards of 90 acres.

Wheat.—This crop is regular and good, without the least failure.

Barley.—This crop excellent throughout, and the clover has come well.

Turnips.—A great portion good; they are all very healthy, and in a growing state, but there is some ground not covered, owing to the slug after their appearance above ground.

Clover.—Mown for fodder, and a fair crop; the after crop very great, and has kept a large flock of sheep and the working horses.

I have only further to remark, that the whole of the above crops have not been the least affected or injured by the very wet season we have experienced; the whole quantity is most perfect.

The land is now worked close to the hedges, and there is neither ditch nor furrow. Although there is a little failure in the turnips, they will bear inspection. I am led to suppose this short account may be acceptable, and I hope soon to see you here, when you will be able to judge, and I have no doubt gratified, to find the land so firm and sound. The clover leys plough up beautifully.

I have the honour to be, Sir,
Your faithful and most obedient humble servant,
RICHARD WHITE.

The Hon. R. H. Clive.

Mr. Lloyd continued.—The little experience he had had of the effects of subsoil ploughing fully confirmed every statement in the above letter, and he trusted soon to be able to give a satisfactory account of the results in his own case.

At the late meeting of the Leyland Agricultural Society, Mr. ALMOND said—The plan he pursued was to drain down the fall, each furrow next the plough being laid across in an angle of 35. He used three horses, and allowed them to walk on the land. Mr. A. then proceeded to say that he ploughed to the depth of about seven inches, after which he followed with the subsoil plough, stirring and loosening the land for seven or eight inches, to enable the water to percolate through the clayey subsoil into the main drain. The land he had so treated during the late wet season was now in so dry a state as to be quite ready for the reception of wheat. He calculated the cost of subsoiling at 3*l.* per acre, and if farmers were only sensible of the great advantages to be derived therefrom, they would by no means grudge the cost of the outlay. A neighbour of his had had a field two summers in fallow, and it was yet in so wet a state as to be unfit to be used for a wheat crop. He himself had land, which before being treated in the manner he pursued was not worth 2*l.* an acre, but was now deserving of 5*l.* He should not recommend commencing cropping with wheat, but turnips or potatoes, oats or clover, then follow with wheat, next beans or potatoes. It was a valuable plan to produce extensive crops of turnips, when stock was kept, as by so doing they secured a better supply of manure. If gentlemen would only visit him and examine into his system, they would readily acknowledge that the subsoil plough was the most valuable farm implement ever introduced. He farmed from two to three hundred statute acres, and he was fully determined that every acre should have the benefit of subsoil ploughing. He made his drains two feet deep, and they were cut longitudinally to the drain. Where the land had the benefit of the subsoil plough, the drains would answer at twelve yards apart, and he felt quite justified in saying that the advantages of draining can only be very imperfectly experienced, unless accompanied with subsoil ploughing. *(Cheers.)*

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Monthly Council, held on Wednesday, the 3d of November, present, Thomas Raymond Barker, Esq., in the chair, Colonel Austen, Richard Westbrook Baker, Esq., Daniel Barclay, Esq., M.P., French Burke, Esq., Colonel Challoner, James Dean, Esq., Humphrey Gibbs, Esq., William Fisher Hobbs, Esq., George Kimberley, Esq., and William Shaw, Esq.

His Grace the Duke of Buccleugh, of Whitehall, London, was elected a Governor.

Colonel Challoner, Chairman of the Finance committee, having presented the monthly report of the state of the funds of the Society, gave notice of his intention to move at the next monthly Council an alteration in that part of the bye-laws which regulates the distribution of the Journal, making it the future rule of the Society that each Member shall have a claim on those parts of the Journal which have been published in the course of any year for which his subscription has been paid.

Food for Labourers and Cottage Gardening.

Mr. Burke gave notice of his intention to make a motion at the next monthly Council on the desirableness of some cheap manual for extensive distribution among the labouring population, on the subject of cottage cookery and gardening.

New Horse-Peas.

Mr. Gibbs was requested to test the merits, by proper cultivation, of some samples of new horse-peas, sent to the Society by Mr. Philip Barnes, Trustee of the Royal Botanic Society of London, and grown in Norfolk by the Rev. — Priest.

Report on Implements.

Messrs. Parkes, Graburn, and Legard, having transmitted to the Council an elaborate Report on the peculiar merits of economy and construction possessed by the agricultural implements exhibited at the Liverpool Meeting, this Report was ordered to be read at the General Meeting of the Society on the 11th of December, and also printed in the forthcoming part of the Journal.

Diseases of Cattle, &c.

On the motion of Mr. Shaw, seconded by Mr. Dean, it was resolved, That the grant made to the Veterinary College be discontinued at the end of the current half-year, unless it be shown to the satisfaction of the Council that additional and efficient means have been taken to improve the system of instruction to the pupils of the College, so far as regards the Diseases of Cattle, Sheep, and Pigs.

Award of Prizes.

It was also resolved, on the motion of Mr. Shaw—'That in future an official statement of the award of prizes be published immediately after the annual country meeting; and that it be an instruction to the Bristol committee to carry out this principle generally into operation.

Districts for the Annual Country Meetings.

Mr. Shaw then brought forward his motion for the appointment of a committee, to consider the best mode of dividing England and Wales into particular districts for holding the annual country meetings—each district to comprise a certain number of contiguous counties; and the meetings to be held successively at some place, within the range of each respective district, and to report the result of their enquiries to the Council. The following gentlemen were named members of the committee:—William Shaw, Esq., Henry Handley, Esq., President, The Duke of Richmond, Earl Spencer, Philip Pusey, Esq., M.P., James Dean, Esq., French Burke, Esq., W. Fisher Hobbs, Esq., R. W. Baker, Esq., and Humphrey Gibbs, Esq.

Annual Country Meeting of 1843.

It was decided that the place of Meeting, in the country, for the year 1843, should be taken into consideration at the next Monthly Council, on the 1st of December.

Sir John Robinson, as Convener of the Committee on Implements of the Highland and Agricultural Society of Scotland, communicated an account of Steele's Pneumatic Cheese Press; Mr. Marmont, Secretary of the Bristol Agricultural Society, presented a map of the City of Bristol and its environs; Mr. William Taylor, an account of the mode of treating the Black Spauld, or Quarter-ill, so fatal among Black Cattle; and Mr. R. W. Dixon, of Wickham Mills, an account of his trials with the Mazagan Beans.

The Council then adjourned for a fortnight, to Wednesday, the 17th of November.

BRISTOL MEETING.

The general Bristol committee held a meeting on Wednesday, the 10th of November, present, his Grace the Duke of Richmond, chairman of the committee, in the chair; Colonel Austen, Thomas Raymond Barker, Esq., and William Shaw, Esq.

The Chairman laid before the committee the various reports transmitted to him by William Miles, Esq., M.P., and James Marmont, Esq., secretary of the Bristol Agricultural Society, relative to the sites proposed as most suitable for the cattle and implement ground and the dinner pavilion; along with the replies his Grace had received to the various inquiries he had instituted in reference to the locality, conditions, and comparative advantages of the sites in question.

The committee then adjourned to Wednesday next, the 17th of November; the Council also, as well as the Finance and District Committees, each holding a meeting on that day.

At a Council held on Wednesday, the 17th of November, present, His Grace the Duke of Richmond, K. G., in the chair, David Barclay, Esq., Thomas Raymond Barker, Esq., John Raymond Barker, Esq., French Burke, Esq., Colonel Challoner, James Dean, Esq., W. Fisher Hobbs. Esq., and William Shaw, Esq.

Lectures to the Members.

The Council resolved that the President should be requested to make arrangements for the delivery of a Lecture or Lectures to the Members of the Society during the week of the Smithfield Club Show, and the General Meeting of the Society, on some topics of agricultural interest, and similar to the Lecture which Professor Henslow delivered before the Society with so much success, on the occasion of the last year's Christmas Meeting.

Rooms thrown open.

It was also ordered that the Rooms of the Society in Cavendish-square should again be thrown open for three nights during the week of the General Meeting, for the accommodation of those Members of the Society who should be in Town on the occasion of the Smithfield Cattle Show, namely, on Wednesday the 8th, Thursday the 9th, and Friday the 10th of December, from six till ten o'clock each evening.

Receipt of Subscriptions.

It was resolved that application should be made to Earl Spencer, President of the Smithfield Cattle Club, requesting leave for the appropriation of some room adjoining the Smithfield Show-yard, where the members of the Royal Agricultural Society of England who visited the Show might, with least inconvenience to themselves, have an opportunity of paying their subscriptions.

Annual County Meeting of 1843.

All communications respecting the place of the annual meeting of 1843, were referred to the monthly council on the 1st December, when the question of the place at which the meeting for that year would be held would be finally settled.

Communications were received from the Secretaries of the Annapolis Agricultural Society in Nova Scotia, requesting to enter into communication with the Society; from Sir Robert Price, and Mr. Barthorpp, stating the prevalence of the epidemic in Herefordshire and Suffolk; and from the Hon. John Simpson, of Babworth Hall, Notts, and Mr. W. J. Clarke, of Buckland-Tout-Saints, Devonshire, on the results of their trials with nitrate of soda.

Mr. Shaw presented a copy of "The Farmer's Almanac and Calendar" for the year 1842, arranged on the same plan as the publication for the present year, and embracing in a compendious form, not only a great number of tables and a fund of information most useful in a practical point of view to the farmer, but a variety of details on topics of the highest interest to the general cultivator of the soil. The Geological and Statistical Societies presented the last reports of their proceedings; Mr. Youatt, the last number of the Veterinarian; Mr. Fothergill, the treatises of Mr. Cuthbert Johnson, on Nitrate of Soda, and Gypsum; Mr. Waterston, the two first parts of his Cyclopædia of Commerce; and Messrs. Longman, the parts at present published, of Mr. Johnson's Farmer's Encyclopædia.

Bristol Committee.

The Bristol Committee held a meeting on the same day, his Grace the Duke of Richmond, Chairman, in the chair.

The Chairman having read to the committee Mr. Marmont's report on the subject of suitable sites for the Cattle and Implement ground, and the Pavilion for the Great Dinner, on the south of Bristol, and in the immediate neighbourhood of the railway terminus, his Grace proceeded to lay before them the correspondence which had recently taken place between himself as chairman of the committee, and George Woodroffe Franklyn, Esq., the newly-elected Mayor of Bristol for the ensuing year. The Duke of Richmond informed the Mayor of the Society's intention to hold their annual Country Meeting of 1842 in the city of Bristol, in the month of July, and solicited in the name of the Society, his co-operation and assistance in carrying out their objects on this occasion, and having referred to the favourable opinion expressed by his predecessor in office, Robert Phippen, Esq., the late Mayor, and to the kind and hospitable manner in which that gentleman had received the deputation of the Society when at Bristol, his Grace expressed his own hope and that of the Committee, that the Society would have the advantage of Mr. Franklyn's countenance and support in his new capacity as Mayor of the city of Bristol.

In reply to this communication, Mr. Franklyn begged to assure the Duke of Richmond that he would have the highest satisfaction in rendering every assistance and support to the Royal Agricultural Society of England, at their annual Meeting to be held in July next, both in his individual capacity as well as Mayor of Bristol, concluding with expressing the pleasure he should have in paying every courtesy to his Grace and the other representatives of the Society.

The Committee having entered on the consideration of various arrangements connected with the Meeting, and requested the Duke of Richmond to favour them with a future report on the subject of his Grace's correspondence respecting suitable accommodation for the Council Dinner, and official rooms for the purposes of the Council and the Finance Committee, then adjourned until Mr. Marmont's further report of enquiries respecting suitable sites had been received.

The Council then adjourned for a fortnight, to the 1st of December.

NEW MEMBERS.

The following gentlemen have been elected members of the Society during the month.

Alexander, Robert, Summer Hill, Tunbridge, Kent.
Alexander, James, Summer Hill, Tunbridge, Kent.
Ames, Levi, The Hyde, St. Albans, Herts
Atkinson, Richard, Ellel Grange, near Lancaster.
Baker, John, Woking Park Farm, Woking, Surrey
Barnes, Peter, Royal Botanic Society, London
Berington, William, Little Malvern, Worcestershire.
Biggs, H., Deptford Inn, Kent
Bowen, Evan, Eusden House, Shrewsbury, Shropshire
Carr, Ralph, Wedgeley House, Alnwick, Northumberland.
Carter, John Moses, Hertford
Caulfield, St. George, Wentworths, Virginia Water, Chertsey, Surrey.
Cawdor, the Earl of, F.R.S., 74, South Audley Street, London.
Cooper, Frederick L, Walton, Burton-on-Trent, Staffordshire
Davis, T., 69, Lower Brook-street, London.
Eager, William, Newark Mill, Ripley, Surrey
Emlyn, Viscount, M. P., Stackpole Court, Pembroke.
Freeman, John, Gaines, Herefordshire.
Gileham, Rev. Thomas W., Liddington, Uppingham, Rutlandshire.
Glencross, W., Luxton, Liskeard, Cornwall.
Grace, Joseph Mills, Downend, near Bristol.
Grant, John, Manningford, Bruce, Devizes, Wilts
Hanham, Joseph Carey, East Pennard, Shepton-Mallet, Somerset.
Harrison, William, Sugarswell, Shennington, Banbury, Oxon
Hill, Richard, Span, Godshill, Isle of Wight
Howey, Thomas, Lilburn, Wooler, Northumberland.
Kirsop, James, The Spittal, Hexham, Northumberland.
Lucas, John, H , Stout Hall, Swansea, S. W.
Lucas, Henry, Uplands, Swansea, S. W.
Marsham, Viscount, M.P., Boxley, near Maidstone, Kent
Marton, George, M. P., Capernwray Hall, near Lancaster.
Medlicot, Richard, Hyssington, Bishops' Castle, Shropshire
Morley, John, 3, Upper George-street, Bryanston-square, London.
Nevill, Rev. Christopher, Market Rasen, Lincolnshire.
Norton, John, Broadway Hall, Bishops' Castle, Shropshire
Roal, John, Brendon Hill, Taunton, Somersetshire.
Sladden, Isaac, Herne, Canterbury, Kent.
Stacey, Rev. J. J., Carmarthen, S. W.
Sworder, Thomas, Hertford
Tremenheere, Seymour, 105, Pall Mall, London
Twyford, Rev. Charles Edward, Trotton, Midhurst, Sussex.
Upton, Henry, Colworth-Oving, Chichester, Sussex
Verity, Richard, M. D., Dean, Kimbolton, Huntingdonshire.
Wade, William, Thomas, Great Dunmow, Essex.
Wason, James, Liverpool.
White, Joseph, Little Witley, near Worcester.
Williams, Penry, (Lord-Lieutenant of Brecknockshire), Penpont, Brecknockshire

PORTABLE STEAM THRASHING MACHINE.—Mr. Howden, Boston, has favoured us with a description of a portable thrashing machine wrought by steam, of six-horse power, which costs 250*l.* including both engine and machine, and with one feeder can thrash seven quarters of wheat in an hour, and is calculated to beat out 100 quarters a day, with more people to work it. The steam machinery stands on a carriage with 4 wheels, and the thrashing part on another carriage with 2 wheels, and the whole is easily drawn by three horses. It consumes 56lbs. of common coal in an hour, and requires six pails of water in that time; but when a pond of water is convenient it supplies itself by means of a pipe. The risk of fire is provided against by having a reservoir of water at the bottom of the chimney, to quench any sparks that may arise; and it consumes nearly the whole of the smoke. The machine is in the possession of Mr. Smith, Wormgate, Boston, who thrashes for hire at 1s. 6d. per quarter, finding fuel.

FARMERS' CLUBS.

TO THE EDITOR OF THE HEREFORD TIMES.

Sir,—I learn with much pleasure, through the medium of your valuable paper, that there are a few farmers' clubs established in this county; and I venture to hope that, ere long, there will not be many districts in it without one.

Those societies, I think, have not yet received that attention which their merits seem to deserve. Our agricultural society is unquestionably an excellent institution, and has no doubt tended much to improve our valuable breed of cattle; but farmers' clubs, while they do not neglect this branch of agriculture, afford opportunities of discussing subjects connected with *the cultivation of the land*, which cannot properly be brought within the sphere of the agricultural society; and, surely, in these times, every means should be resorted to which will have the effect of producing more food for man and beast. It has been asserted, that England is fully capable of producing corn enough to support her present population; and when we take into consideration the quantity of land *uncultivated*, and that which is *badly cultivated*, it really seems that the assertion is well founded. Any institution, therefore, that has for its object the introduction of a better system of husbandry among us, or of any improvement in those systems now adopted, I conceive deserves to be encouraged. There are not, perhaps, wanting those who say or think that they know how to farm as well as their neighbours, and need not enter into a club to learn their business; still it is to be hoped that there are but a few of this selfish and conceited class—selfish, I repeat, because if they have reached the height of their profession, benevolence would urge them to impart their knowledge to their brother farmers; conceited they must be, or they would not entertain such a sentiment.

Many erroneous ideas have gone abroad respecting the nature and objects of Farmers' Clubs; but no one who is acquainted with the nature of their proceedings can, I think, withhold his testimony of their value. Several farmers meet once a month, or oftener, for the express purpose of discussing subjects connected with their pursuits, according to the rules of their club; and thus the opinion and practice of each member are known, furnishing a collection of evidence which is rarely otherwise to be obtained. The resolutions they come to are not intended to represent the opinion of one man, but they are the result of the experience of perhaps forty or fifty intelligent farmers, and are recorded in the minute book for the inspection of any member of the club. A library, containing some standard agricultural works and approved periodicals, forms an excellent appendage to a club, and it is easily formed.

The *Journal of the Royal Agricultural Society* alone contains much to interest and profit the farmer; and I believe a correspondence may be carried on between that society and any Farmers' Club or agricultural society in the kingdom.

In cities and towns, societies of this sort are common: mechanics have their institutions—every profession has its club. Why, then, should not farmers have their club? The parties to whom I have alluded, have no doubt found their societies work well, or we should not see them so rapidly increasing; and I am sure farmers have as much need as any class of men, of deriving information connected with their occupation, inasmuch as, in addition to common occurrences, they have a variety of climates, and the inclemency of the seasons to contend with. "A farmer's business," it is said, "is never learnt." It is true farmers often meet at market, &c., and sometimes discuss subjects relating to their business; but in general they have something else to attend to there; here, however, is an evening once a month, or oftener, set apart for this very purpose. If the funds would admit of it, encouragement might be given to the labourers, by offering premiums for the best ploughmen, &c. The occupiers of the cleanest and neatest cottages might likewise be rewarded; and thus a spirit of improvement and emulation might be infused into the minds of the labourers as well as into those of the farmers.

To Mr. Shaw, the able Editor of the "Mark Lane Express," I believe the merit is due, if not of introducing Farmers' Clubs, of at least advocating their utility, and urging their formation throughout the country.

It must be very gratifying to that gentleman to observe how many clubs have lately sprung up, and to find the most influential landowners in the kingdom recommending them to their tenants and neighbours.

You, Sir, as Editor of the "Hereford Times," have likewise urged the establishment of these clubs in this and the adjoining counties, and I am glad to observe, that you occasionally favour us with reports of the proceedings of some of them that are already formed, and apparently working well. I hope, Sir, that you will have the gratification of seeing your recommendations carried into effect.—I remain, Sir, your obedient servant,
AGRICOLA.

Oct. 26.

WORMS IN GRASS LAWNS.—A quarter of an ounce of corrosive sublimate to three gallons of water (put on with a gardener's water-pan) will bring the worms to the surface, when the greatest part of them die (but they ought to be picked off); this process does not in the least injure the grass. It was tried in the month of September last, on a bowling-green in Penrith, 32 yards by 45, when 22 stones weight of worms, of 14lbs. to the stone, were taken out of it, besides several small quantities got in making the first experiment.—*Herald.*

The following is an account, kept by a farmer in the parish of Llanwrda, Carmarthenshire, of commencing and finishing his corn harvest, from the year 1799 to the present year:—

	BEGAN.	ENDED.		BEGAN.	ENDED.
1799..	Sept. 3..	Nov. 12	1821..	Aug. 22..	Oct. 2
1800..	Aug. 7..	Sept. 13	1822..	Aug. 7..	Sept. 13
1801..	Aug. 13..	Sept. 11	1823..	Sept. 1..	Oct. 21
1802..	Aug. 20..	Sept. 24	1824..	Aug. 23..	Sept. 22
1803..	Aug. 18..	Sept. 19	1825..	Aug. 1..	Sept. 21
1804..	Aug. 21..	Sept. 29	1826..	July 25..	Aug. 14*
1805..	Aug. 27..	Oct. 3	1827..	Aug. 17..	Sept. 4
1806..	Aug. 27..	Oct. 1	1828..	Aug. 22..	Sept. 9
1807..	Aug. 20..	Sept. 19	1829..	Aug. 12..	Sept. 25
1808..	Aug. 13..	Oct. 23	1830..	Aug. 30. .	Oct. 7
1809..	Aug. 24..	Oct. 2	1831..	Aug. 10..	Sept. 22
1810..	Aug. 30..	Oct. 9	1832..	Aug. 15..	Sept. 20
1811..	Aug. 26..	Sept. 28	1833..	Aug. 19..	Sept. 20
1812..	Aug. 20..	Oct. 12	1834..	Aug. 11..	Sept. 16
1813..	Aug. 26..	Sept. 27	1835..	Aug. 15..	Sept. 11
1814..	Aug. 24..	Sept. 17	1836..	Aug. 26..	Oct. 19
1815 .	Aug. 18..	Sept. 15	1837..	Aug. 17..	Sept. 25
1816..	Sept. 17..	Oct. 30	1838..	Aug. 31..	Oct. 4
1817..	Sept. 12..	Oct. 16	1839...	Sept. 4..	Oct. 29
1818..	Aug. 10..	Sept. 29	1840..	Aug. 27..	Oct. 5
1819..	Aug. 13..	Sept. 10	1841..	Aug. 31..	Oct. 21
1820..	Aug. 12 .	Sept. 6			

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* Might have commenced on July 17, but the hay harvest had not been finished.

CORN LAWS AND SLIDING SCALE.

TO THE RIGHT HON. EARL SPENCER.

My Lord,—The following letter which, for several reasons that will be named, I take the liberty of addressing to your lordship, will not be the first amongst many written on the subject of the corn laws, in which I fear it will be impossible to steer clear of party politics. It has always been my anxious endeavour so to argue the question as to prevent those who favoured me with their attention being able to judge of the political sentiments of the writer. By this I hoped to gain the attention of men of both the great political parties, in order that the subject might be coolly and dispassionately considered. I say advisedly both the great political parties, because, although a third and strong party has sprung up, I did not think it worth while to waste my time in arguing the question with those who are for doing away with all corn laws. My reason for fearing that this letter may run into party politics is, that, to my mind, the late administration so entirely lent themselves to the Anti-corn-law League in proposing the abolition of the present system of corn laws, and substituting a fixed duty of 8s., payable at all times, which must have inevitably led to their entire removal, that I see the least possible difference between that proposition and the Manchester free trade in corn.

Your lordship has for so many years held the office of President of the Smithfield Club, and by long practical experience become so thoroughly acquainted with agriculture, that your opinion on the momentous question of corn laws would naturally carry with it great weight. When, in addition to this, your lordship had, as a statesman, acquired the name of "Honest Lord Althorp," the public would immediately and naturally be certain that your support of the ministerial proposition was not grounded on mere party motives, but was the conscientious dictate of your own heart. We have been told that it was stated, by a late eminent French diplomatist, that language was given to us merely to conceal our thoughts. I am sure your lordship does not assent to this doctrine, but will agree that in the highest as well as the lowest affairs in life, honesty will eventually prove to be the best policy. Well knowing, therefore, that your opinion is a sincere one, and that, consequently, it will have great weight, I venture to call your attention to a re-consideration of the subject, in the hope that your lordship may be inclined to doubt somewhat of your opinion as to the effect of an 8s. fixed duty on wheat, which, if reported correctly in the public papers, was, that the price of corn in England would not be thereby materially altered.

It was, I believe, in 1827, that your lordship, with that affability and condescension so natural to you, and which have won the hearts of so great a proportion of English farmers, invited me to your chambers in the Albany, that we might quietly discuss the subject of the corn laws. I well remember your lordship opening the discussion by saying that you could not understand—as you agreed with the premises I had laid down in a short pamphlet just then published—how it was that we did not arrive at the same conclusion. The proposition laid down was this:—"That when we are *in want* of foreign corn, the prices abroad rise to the price here; but that, on the contrary, when we are not in want of it, the price here, if the trade were free, would fall to the price abroad."

It would not be correct, even could I remember it, to state the reason which prevented your lordship coming to the same conclusion as myself; but I may be allowed to add, that I could not, from what then fell from your lordship, have possibly imagined that you would have ever given your consent to an abolition of all corn laws on payment of only 8s. duty on wheat. Your lordship knows that, together with my lamented friend, the late Webb Hall, I advocated the principle of a fixed duty; but then it was such a duty as the late Mr. Huskisson, in his celebrated report of 1821, agreed it would be indispensable it should be, if agricultural protection depended only on a fixed duty.

These are the words of the report—"It would be indispensable for the just execution of this principle that the duty should be calculated fairly, to countervail the difference of expense, including the ordinary rate of profit at which corn in the present state of this country can be grown and brought to market within the United Kingdom, compared with the expense, including also the ordinary rate of profit of producing it in any of those countries from whence our principal supplies of foreign corn have usually been drawn, joined to the ordinary charges of conveying it from thence to our markets." Your lordship was a member of that committee, and at the time it was understood that you entirely concurred with Mr. Huskisson in this principle; why, I ask your lordship, if the 8s. duty bears any affinity to that principle which the report stated was indispensable? In the year 1827, after maturely weighing the subject in my mind, having heard the objections made to a fixed duty when corn should be high, I drew up a plan, which was submitted to the late Mr. Canning, then premier, and which I believed would answer the same purpose as a high fixed duty in giving protection to our agriculture, without being liable to the objection above stated. Mr. Canning did me the high honour of adopting the principle, by proposing that the pivot price should be 60s., duty 20s. per qr., raising or lowering the duty 2s. for 1s. Thus:—

At 55s. the duty would be 30s. per qr.
At 65s....... .... 10s. ,,

In consequence of an amendment carried in the House of Lords, Mr. Canning put off the measure till another year. His death soon followed, and under the premiership of the Duke of Wellington, the corn-law alteration took place in 1828. Unfortunately, the principle of the plan as proposed by me and adopted by Mr. Canning, was much altered, and at the upper end of the scale the duty took off so rapidly, that when we *really wanted* foreign wheat, all sorts of tricks have been resorted to to raise the averages, which I publicly at the time of passing the bill foretold must inevitably be the case. Had Mr. Canning's plan been adopted, I am convinced that the great outcry against the corn laws would not have been heard of; and were that plan now to be carried, with a revision as to the places and manner of taking the averages, I believe the question would settle down quietly.

Your lordship has no doubt seen a report of the speech of Mr. Christopher, at a meeting of his constituents at Boston, which follows up the suggestion made by me in a public letter to his Grace the Duke of Wellington, on the 10th of August last, that Mark-lane should be struck out of the averages. I would treat Mark-lane or any market in which tricks have been so glaringly played with the averages, the same as I would a borough, against which gross bribery is proved,—permit them to make no more returns. But the great point is to do away with the inducement and the facility to these tricks, which can only be done by lowering the duty as gradually as possible, and on this ground I believe a duty of 15s. at 60s., raising and lowering the duty *pari passu* with the average,—thus at 65s., 10s.; at 70s., 5s., would now answer every purpose better than Mr. Canning's plan.

Reverting now to the proposition as stated before, in which your lordship did me the honour to agree in, in 1827, I come to the general subject, which may for illustration be divided into the following queries:—

Does the United Kingdom, with an average crop, grow enough for the supply of its inhabitants?

If it does not, what is the best plan of admitting foreign wheat, so as not to reduce our home growth and at the same time prevent the price being unnecessarily raised to the consumers?

If we do not grow enough with an average crop, is it probable that our home growth could be so increased without pressing on the consumer?

In order to give satisfactory answers to these queries, it will be right to refer to the last thirteen years, that is, since the passing of the present corn laws.

When prohibition was exchanged, in 1828, for protection by duty, the farmers throughout the kingdom believed the question was *set at rest for a very long period.* Consequently tenants were anxious to take

leases and invest their capital in draining, manuring, and improving their farms, fully relying on receiving an adequate return. What was the consequence? Favoured by a kind Providence, as soon as these improvements began to take effect, the price fell as follows:—
1829..66s. 3d. — 1830..64s. 3d. — 1831..66s. 4d.
1832..58s. 6d. — 1833..52s. 11d. — 1834..46s. 2d.
and in 1835 *thirty-nine shillings and four pence.*

Does not this, my lord, prove that British agriculture has only to meet with encouragement and to feel sure that its protection will not be wantonly broken in upon, and that the consumers will be the greatest gainers?

Some few agriculturists, from not understanding the subject, attributed this lowering of prices to the corn laws. They were right in one sense, because it was very much caused by our abundant crops, arising, in a great degree, from the surplus capital invested entirely on the faith of the new corn law. At the time I repudiated publicly any other idea, and in the memorable words of the late Mr. Huskisson, said—"*Let the bread we eat be the produce of corn grown among ourselves, and for one I care not how cheap it is, the cheaper the better.*"

The moment corn began to rise in price, which in an article so dependent on the seasons must often be the case, we began to hear of the alteration of the corn laws. The press in but too many instances, urged on the cry; noblemen and gentlemen but too often were ready to yield to it; and from that time the farmer has felt there was no security for investment of capital, and he would as soon have thought of improving his farm under a landlord who would grant no lease, but let all his farms by tender annually, as in burying his property in the soil, for which it was probable he would get no return. Having seen this, I have no hesitation in answering the first question by saying, that *at present* the United Kingdom with an average crop does *not* grow enough for the supply of its inhabitants.

To the second question I answer, that I know of no mode so practicable as the principle of graduated duty, taking care to have the averages as correct as possible, and taking away the great inducement to play tricks with them by lowering the duty only equally with the price.

To the third question, which perhaps should have been the second, I say decidedly that our home growth could be increased to make our average crop equal to our supply, without pressing on the consumer.

With the years 1833, 1834, and 1835, so fresh in remembrance, it is impossible that I can come to any other conclusion. When, my lord, also, I bear in mind, that since those years we have established—and chiefly through your lordship and the Duke of Richmond—the Royal Agricultural Society of England, I should indeed pay an ill compliment to those who have been so instrumental in founding this long-wanted stimulus to agricultural improvement, were I for a moment to doubt on the subject.

I have not the census of 1831 and 1841 before me, but if I recollect right, our population has increased two millions in ten years, that is, at the rate of 200,000 a year.

Calculating our growth of wheat at six millions of acres, and the average produce at three quarters per acre, gives annually a produce of eighteen millions of quarters.

Say that we require fifteen millions for our consumption, two millions for seed, and one million for starch, &c., including the tail corn made use of for animals. If this calculation be anything like correct, our average growth is now nearly equal to our consumption.

Suppose that we are for the next ten years to have an annual increase of inhabitants (and considering that the new poor law, which has done so much to check early and improvident marriages, has only been in operation part of the last ten, the calculation is fair) of 200,000, are the advantages to flow from the Royal English Agricultural Society so small as not to increase the produce of wheat *one half bushel annually per acre*, which, allowing 7½ bushels per head, would be sufficient?

No, my lord, I will not think so meanly of the good to be derived from the three great societies of England, Scotland, and Ireland; and I believe, if only agriculture be protected and encouraged, an average crop will be equal to our consumption.

There is still a fourth question, which is almost the same as the second, and that is—The best plan of admitting foreign corn when our crop is not an average one, and we really want it? To this the same answer may be returned. We have within the last two months seen the greatest advantage to the consumer from having so large a quantity of foreign wheat on hand. The only defects in the law were, that the duty lowered so rapidly, thus offering an inducement to the holders to keep back their corn when it was really wanted, and escaping the payment of duty.

Space does not permit me to go further into the subject at present. I well remember our never-failing friend, Lord Western's, great objection to the change of prohibition for protection by duty was, as he himself told me, that if ministers once obtained a revenue from the import of corn, they would soon consider it rather in the light of revenue than protection to agriculture. How correct his lordship's anticipations were is entirely proved by the late 8s. per qr. proposition,

I have to apologise to your lordship for taking up so much of your valuable time, if you honour this with reading it; but I could not compress it without leaving the subject in confusion.

There are many more points of view in which to look at it, but I will only enumerate a few of them.

Our manufacturing population forms undoubtedly a great proportion of the whole, but taking into consideration not only our home trade, but also our colonies and dependencies for supplying which we are in exclusive possession, the proportion of those employed in manufacturing for foreign open markets has been much overrated.

Some of those manufacturers realised immense profits a few years since. New mills and factories were built; new hands were brought from the agricultural districts, aye, even as far as Sussex. Produce is doubled, and the moment a check comes, an outcry is raised against corn laws—for that which manufacturers have only to thank themselves.

If wheat should be ever again 10*l.* per qr. which it was in the last war, and any farmers were mad enough to invest capital in attempting to grow wheat on the poorest part of the Southdowns, in view of which I am now writing, what would be the answer to their demand for protection at such a standard of price? Why, that their insane speculations deserved no encouragement. And why, my lord, is not the same answer to be given to to those manufacturers who wildly embarked in such mad prospects?

I will now conclude this long letter by an extract which I published in the pamphlet in 1826, as from an unknown author. The words were these:—

"Governments who found their prosperity upon manufactures, sleep upon gunpowder. Do I then think (continues the writer) that England is in danger of revolution? If the manufacturing system continues to be extended in increasing as it naturally does increase, the number, the misery, the depravity of the poor, I believe that revolution must inevitably come, and in its most fearful shape."

I have the honour to be, my lord, with sincere respect and esteem, your lordship's most faithful servant,

Glynde, Nov. 4. John Ellman.

PROTECTION OF YOUNG TREES.—Take a proportionate quantity of fresh night-soil, rather in a liquid state, with an admixture of quick lime, soot, and a little sulphur (the latter ingredient we have often dispensed with, and still produced the same result,) incorporating the whole with a brush made of old sacking, with which we besmear the trees from the ground to a little above the reach of the depredators. Its fetid smell leaves it when thoroughly dry. It is in no way injurious to the health of the trees, and from its adhesive quality, one coating in the season proves quite sufficient.

CULTURE OF THE CIDER ORCHARD.

(READ BY MR. CATO, GARDENER TO LORD CLINTON, AT THE GREAT TORRINGTON FARMERS' CLUB.)

MY LORD AND GENTLEMEN,—Having been requested by this society to introduce an article on the culture of the cider orchard, I have pleasure in laying the following remarks before you.

An orchard is considered amongst the permanent improvements of the farm, and is therefore generally found by the proprietor. Most writers on the subject agree that a situation having a declivity open towards the south-east is the most favourable; but as this aspect cannot always be obtained, the best means should be used with that which is most convenient. Should the situation chosen be exposed to the north or south-west winds, the first thing to be set about is to plant a proper hedge for shelter. The general method of forming hedges in this quarter is well known: the best soil is turned undermost, and the subsoil is placed uppermost, into which the plants are inserted; and from this method arises the cause of those diseased-looking hedges, which often require four or five years to make as many inches of young wood. The plan I herein recommend is a little more expensive than that noticed; the dimensions are the same—four feet wide of the upper soil, right across the hedge and side-drains, is to be taken out as an opening, and carted to where the hedge is to finish, to make up the last four feet; the subsoil of the two side-drains is to be put into the foundation of the hedge; the upper soil of the next four feet is to be put above the subsoil, which will complete the first four feet, and so on till finished. When the ground has become settled or consolidated, a row of beech plants should be inserted, at the distance of eighteen inches apart; the superior growth will soon become manifest. I highly recommend a holly-hedge for shelter; the plants should be planted at the same distance as beech, and should be about fifteen or eighteen inches high. The best season for planting holly is immediately after they have completed their summer growth, which is about the middle of July. Advantage should be taken of damp, cloudy weather. Such hedges are close and ornamental during winter. While on the subject of hedges, it may not be amiss to say a few words on hedges which divide the fields of the farm, which in this district are generally used for firewood. If they were made in the manner described for beech and holly, and planted at four feet apart with oak or ash—for the soil is suitable for ash—no wood is more profitable for hedges. They should be both cut down to within one foot of the ground two or three years after being planted; this will occasion the plants to shoot out from the sides and become more valuable. The soil in this district in general is particularly suitable to the growth of oak. Where three or four hedges meet there might be fine groups of trees of all sorts introduced, which would become profitable to the landowner as well as ornamental to the country. I merely mention this to draw the attention of proprietors to the subject. Having completed the fences, the lines of fruit trees should be fixed at the distance of thirty or thirty-five feet, and the drains at the same distance; but if the land is wet, a drain must be placed under every tree, running at right angles with the other drains. No particular depth can be laid down, but from eighteen to twenty inches into the subsoil, filled with stones, will be sufficient. The stones should not be brought above the subsoil; and on opening the drains, the sward that is removed from the surface should be laid aside, and afterwards placed on the top of the stones. Every individual who plants an orchard must, in order to ensure the fruitfulness of his trees, keep the ground perfectly dry. A great quantity of rain falls in this district, and when a clayey subsoil exists, such drains are absolutely necessary. The soil here in general is shallow, and I consider that trees are better with from one foot to fifteen inches of good soil, than if they had two feet, because in deep soil they do not generally ripen their wood well; this I believe is the real cause of so many failures of crops. The cheapest way to prepare the ground for the trees is by the operation of the plough; work it to the depth of the soil, that the bottom earth may become pulverized. The September previous to planting, the young trees should have their shoots shortened to two or three eyes. October or November is the proper time to plant; and the shoots which have been previously shortened as described, will burst forth with more than usual vigour in spring. A stake should be placed to support each tree, and to keep it upright. During the following September, the young shoots should be shortened as before, and the stakes removed from such trees as are well rooted. Afterwards the trees should be looked over yearly, pruning out such branches as cross and are too close. If the orchard is in a very exposed situation, a hedge composed of apple trees should be run along as before described from south to north; the trees should be planted eight feet apart, and trained up in the shape of a spruce fir tree. The sorts suited for that figure are the Siberian pippin, yellow Siberian, Siberian Harvey, and Foxley pippin; these are upright growing kinds, great bearers, and very hardy. Such a hedge in favourable seasons would yield abundantly, and become a great protection for the other trees during spring and autumn. The object of planting the trees at thirty or thirty-five feet apart is twofold—it admits a free circulation of air, and likewise it is calculated to produce a good crop of grass; so that in seasons when apples fail, the loss is the more trifling. The orchard ground during the first six or seven years may be put under the following crops:—first, potatoes; second, Swedish turnips; third, mangel wurzel; fourth, beans; fifth, cabbage; sixth, white carrots; seventh, early turnips—care being taken not to crop near to the trees, but keeping at a distance, so as their roots may not be disturbed: during the season of growth, the soil around the roots of the trees should be stirred with an iron-toothed rake, which will greatly add to their growth and health. The object of these green crops is to get the land well pulverized and thoroughly cleaned; therefore no weeds in any of these crops should be allowed to run to seed. The ground should be cleared of the early turnips by the middle of July, and about the first of August sown down with grass seeds, for permanent pasture. Pacey's perennial rye-grass, white clover, and wood-grass, (poa nemoralis), are the most suitable for permanent pasture under trees.

I here subjoin Mr. Lawson's kinds and quantities of grass seeds for permanent pasture; likewise several recipes from the *Gardeners' Magazine and Chronicle* for destroying American blight *(Aphis lanigera)*. In offering a few of my own practical remarks on this disease, I beg to state that it may be kept down with attention, if taken at an early stage of its progress; but in this quarter a great many of the orchard trees are so crowded by thick planting, that a free circulation of air is excluded; and in such I have found the blight to prevail most extensively. The best plan for such is to trench up the trees, taking care to gather out every old root as the work proceeds. The ground should then be put under a corn crop, and afterwards under green crop, after which the trees should be planted and the ground cropped as formerly recommended; for when the blight prevails extensively in an old orchard, every attempt to clean and bring the trees to a healthful state becomes of no avail, and yields no recompense for the trouble. When an orchard looks exhausted, ceases to bear well, and the fruit becomes small, the heads of the trees should be well thinned out, and where it is necessary to remove branches one inch in diameter, Forsyth's plaster should be applied to the wound. The lichens that overspread the bark of the trees should be scraped off, and the tree washed over with warm soapsuds or warm soapy water, using a sharp brush. During the succeeding summer the tree will produce young wood where branches were pruned off, and all throughout the top, which afterwards should be thinned in autumn. The drainage should be carefully attended to, and the ground should be trenched within four feet of the stems of the trees, working all beyond that distance among the roots with a three-pronged fork to its original depth. The space of four feet around the stem of the tree to be pointed over shallow with the fork, and frequently stirred in the growing season; all cropping is to be excluded from this space. The other part of the land should be well manured, and two or three green crops taken, and afterwards laid down with grass seeds, as formerly described. Were orchards thus managed, disease would become less prevalent, and the produce much more abundant. "American blight (*Aphis lanigera*).—Many prescriptions have from time to time appeared in the *Gardeners' Magazine* for the American blight. Oil destroys the insect, but is hurtful to the tree. Vitriol reduced to the consistency of sour drops (about seven parts of water to one of vitriol, according to the strength of the vitriol), if applied by rubbing well into the crevices of the wood whereever the kind of hoariness produced by the insect is perceptible, we have found in practice to destroy the insect without hurting the tree: it is very penetrating. Hot water is apt to cool before reaching those insects that are in very inaccessible crevices."

"Coal tar to be applied with a small brush to the part affected."

"The brown pyroligneous acid is also a most effectual remedy for the American blight."

GRASS SEEDS FOR PERMANENT PASTURE.

Perennial ryegrass	30lbs.
Alopecurus pratensis	8
Dactylis glomerata	5
Festuca pratensis	5
Poa trivialis	8
Phleum pratense	7
Trifolium repens	10
——— pratense	3
——— medium	3
Medicago lupulina	3

FORSYTH'S PLASTER.

One bushel of fresh cow-dung; half a bushel of lime-rubbish from old buildings (that from ceilings of rooms is preferable); half a bushel of wood-ashes; and a sixteenth part of a bushel of pit or river sand: the three last articles are to be sifted fine before they are mixed; then work them well together with a spade, and afterwards with a wooden beater, until the stuff is very smooth, like fine plaster used for the ceilings of rooms. The composition being thus made, cut the bark smooth, rounding off the edges; then lay on the plaster one-eighth of an inch thick all over the wound, finishing the edges as thin as possible; then take a quantity of dry powder of wood-ashes mixed with a sixth part of the ashes of burnt bones; put into a tin box with holes in the top, and shake the powder on the surface of the plaster till the whole is covered over with it, beating it with the hand.

CIDER APPLES.

1. Siberian pippin.
2. Grange do.
3. Foxley do.
4. Siberian Harvey.
5. Hogshead.
6. Hagloe.
7. Woodcock.
8. Yellow Siberian.
9. New red must.
10. Old red must.
11. Redstreak.
12. Court pendu.
13. Warwickshire.
14. Harvey's.
15. Cockage.
16. Minshul crab.

WITNEY FARMERS' CLUB.

Monthly Meeting, Nov. 4.

The Chairman, (Mr. H. Bateman) introduced the subject for the evening.—"The use of nitrate of soda as a manure—" From his own experience he was inclined to think unfavourably of its use, having tried it upon wheat, barley, and oats, without any beneficial result; he believed that where success had attended the use of this manure it formed the exception and not the rule. Even among the advocates for this manure, there was much conflicting evidence; he instanced many contradictory statements of different writers upon the subject; and as to its destroying grub and wire-worm, his own trials had no such effect. His opinion was, looking at it as an expenditure upon foreign produce, that the same outlay upon corn feeding would be a better means of promoting the farmer's interests, producing not only the benefits said to be obtained from the use of this article, but also the many advantages arising from the consumption of his own produce, and that with the increase of consumption the increase of future produce. He concluded by exhibiting calculations and statements upon the respective merits of soda and corn.

Mr. Lee (Ducklington), produced two specimens of wheat ears, which he laid before the meeting, having been gathered at the same time from adjoining ridges or portions of one ground; one having been dressed with soda 1½ cwt. to the acre, the other not—the soil a stiff clay, both, portions cultivated alike. The difference in these two bunches of corn was very great; the one gathered from where no soda had been used weighed, thirteen ears, three quarters of an ounce; the same number of ears from that portion of the land manured with soda being over 1¼ ounce; the straw was larger in the last and mildewed and not ripe so soon as the former. He considered the extra produce at twelve bushels per acre, which at the present price of wheat left a net profit of 50s. per acre; he had sown the like quantity on grass land—one an inferior, the other a better soil; there was an immediate benefit upon the former, but not sufficient for a remuneration; the latter was a large produce, but the crop was spoiled by the wet season, which prevented an estimation of the quantity.

Mr. **Jas. Clinch** (Witney.) His experiment was upon three different crops, sowing alternate ridges—result not successful, the wheat appeared finer in the ear; the oat and barley higher in the straw, but no increase in the grain. In referring to the system of corn feeding, he alluded more particularly to the remarkable superiority in the quality of the wool, and also the increase in the weight of the fleece, being in many instances one-fourth more.

Mr. **Thos. Jones**, (Marsh Haddon.) The result of an application to mixed seeds was an increase of half a ton per acre; wheat was larger in the straw, and a trifling produce over those lands not dressed upon a light gravel; on barley and oats the appearance was good while growing, but no satisfactory result at harvest; on grass no improvement.

Mr. **Gillett** (Brizenorton), had used one cwt. per acre upon corn and grass; and although the straw in some instances appeared larger and stronger, there was no more corn. On some Italian ryegrass there was a great improvement and a profitable result; in all other trials the expense was not covered, and in most cases it was a complete failure. The following summary shews each experiment:—

DATE.	CROP.	SOIL.	APPEARANCE GROWING.	HARVEST.	REMARKS.
April 23.	Wheat.	Stonebrash.	Good, a dark colour, six inches higher than wheat adjoining.	Grain coarse, straw mildewed, no increase.	The weather dry, which affected it more than others.
April 23.	Clover.	Gravel.	Looked well.	Not sufficient to pay.	Some Italian rye among this—remarkable.
April 10.	Wheat.	Clay.	No effect.	Complete failure.	——
April 26.	Italian ryegrass.	Gravel.	Remarkably good.	Cut for seed one-third more than others; seed better.	Second year down
April 26.	Grass.	——	Slight improvement:	Not sufficient to pay.	Dry weather affected it.

Mr. **Gillett** favoured the company with a statement, shewing the superiority and advantages of corn feeding.

Mr. **James Pratt** (Leafield), was one who had not yet tried this experiment, and from the evidence brought forward he probably never should; being convinced from fifteen years experience that corn feeding has every advantage, and that the use of soda must give way before the far-to-be-preferred method of consuming corn on the farm; the productive powers of the soil were thereby highly increased, the labour required was less, the ploughing was easier and better, and the crops in succession told a beneficial result.

Mr. Richard Lord, Mr. Thomas Bliss and other members, gave the results of their different trials with this manure, which all tended to convince the meeting that the benefits derived from its application, even in those instances where successful, were not sufficient to remunerate the cost and outlay, and the following resolution was agreed to:—"That the evidence adduced upon this question is not in the opinion of the meeting sufficient to warrant the general use of nitrate of soda as a manure to the British farmer. That should another season be productive of other results, and after being more minutely examined and attended to, the subject ought to have another discussion at a future period." S. Collier, Sec.

ON DESTROYING SLUGS.

Sir,—This has been a most genial season for breeding of slugs; and they are now so numerous, that if they are not destroyed, it can hardly be doubted that they will in the United Kingdom cause a deficiency of from 12 to 1,500,000 quarters in the yield of the ensuing wheat crop.

They may be efficiently destroyed by getting a quantity of new lime (old will do, but not so well), and placing it in some convenient place to slacken six or seven days, against the evenings are moonlight. Then about seven o'clock—not in stormy but mild evenings—let a man (with a boy to lead the horse) take a fair cart-load of the prepared lime, and pass over the corn-field against the wind, and with a *small* hand-shovel spread it wide and high in the air; and every particle of it will do more or less execution. When the cart has passed over the field it should be taken back to the windward side again, and then take another breadth, and so on till the field is finished. About two bushels of lime well managed will do for an acre, and at the same time kill the greater part of the slugs in the hedges.

The cost and trouble would be compensated by the benefit the plant would derive from such a sweet though slight top-dressing. It will be found that by seven o'clock of mild evenings through this month and the next, the whole fraternity will be unhooded, and either crawling or feeding. Slugs are not destroyed by frost, but only kept at home whilst it continues. It will be expedient, in order to get the lime well slackened, to rake the lumps to the outside of the heap, and at times sprinkle them slightly with a watering-pot.

Since writing the above, I have seen an article in your paper of the 8th on the same subject; but as mine is somewhat different, and as I have had a good deal of experience in destroying slugs, you will perhaps insert it. I am, Sir,

An Octogenarian Gardener.

Romsey, Nov. 11th, 1841.

SHORT HORNS (HEREFORDS.)

TO THE EDITOR OF THE MARK-LANE EXPRESS.

Sir,—Seeing in your paper an account of the prices of short-horns, with reference to other stock, I beg to introduce a few to your notice which you had omitted. For instance, at Mr. Parkinson's sale at Babworth, May 29, 1840, "Adelaide," (a four yrs. old cow) sold to J. Ingham, Esq., for 220 gs.; "Collard," a bull calf, sold for 200 gs. to R. M. Fox, Esq.; and you will see by Mr. F's. catalogue, that he has been resold at a less price, but that was accounted for from his suffering from the epidemic, and lameness in the knee from an accident; otherwise, it is probable that he would have made prime cost, as a gentleman had a commission to give 200 gs. for him if all right. You will also see that a two yrs. old heifer was sold for 105 gs. at Fox Hall; another at 70 gs., and 2 yearlings at 62 and 66 gs. And as I think you refer to a sale of Herefords two years ago, I beg to call your attention to the sales at Mr. J. Collings, of White House, Sept. 10, 1839, where Rosabella, 9 yrs. old cow, sold for 105 gs.; Rally, 6 yrs. old, 100 gs.; Rosina, 4 yrs. old, 170 gs.; Young Rachael, 3 yrs. old, 200 gs.; Roseberry, 2 yrs. old, 140 gs.; Ruth, 2 yrs. old, 105 gs.; Rarity, 1 yr. old, 140 gs.; Rosamond, 1 yr. old, 90 gs.; Rosy, (heifer calf) 52 gs. And at Castle Howard, on Sept. 12th, 1839—Retribution, 5 yrs. old, sold for 105 gs.; Sweet-looks, 10 yrs. old, 150 gs.; Martha, 9 yrs. old, 83 gs.; Fairy, 6 yrs old, 92 gs.; Ringlet, 4 yrs. old, 32 gs.; Dowager, 3 yrs. old, 110 gs.; and her twin sister Duchess, 81 gs.; Spot and Spotless, 2 yrs. old, twins, 71 and 70 gs.; Fancy, 3 yrs. old, 160 gs.; Margaret, 3 yrs. old, 90 gs.; Belshazzar, 8 yrs. old bull, 170 gs.; Ganthorpe, 7 yrs. old, 100 gs.; Boz, 2 yrs. old, 100 gs.; Lord Stanley, and St. Ledger, 1 yr. old, 100 gs. each; and on the same day, Mr. Edward's Mayflower, a 9 yrs. old cow, sold for 170 gs; Foggathorpe, 105 gs.; Dahlia, 4 yrs. old, 150 gs.; Malibran, 3 yrs. old, 300 gs.; Golden Drop, 1 yr. old, 135 gs.; and Jemima, a heifer calf, 100 gs.

I am, Sir, your obedient servant,
November 8. A Constant Reader.

Sir,—I read with pleasure your article in the Express of the 1st inst., on the prices that have been obtained for animals of the Short-horn, Hereford, Devon, and Sussex breeds at the recent sales; but I cannot agree with you in thinking that those prices show at all the relative value of the respective breeds, even in the estimation of the agricultural class. The high price shows only the scarcity of animals of that particular breed, of which such animals may be; in other words, I believe the high price of a bull or a cow depends on its superiority to others of the same breed, without any reference whatever to the relative value of that particular breed. If it be so, the extraordinary prices of bulls and cows form no criterion of the value of their respective breeds; but I think the price of steer calves, or (if I may so call them) the raw material of beef, would be some criterion by which to judge of the relative values of different breeds; for I apprehend that steer calves, of whatever breed, will bring only their intrinsic value, which depends entirely on the supposed expence of producing from them a certain quantity and quality of beef, which is the ultimate object in purchasing bulls and cows.

The hope that you may be able to obtain from your numerous correspondents, and publish in your valuable paper, some account of the prices at which the steer calves of the different breeds have been sold, has induced me to address you on this subject.—I am, Sir, your obedient, humble servant,
Berwick, Sussex, Nov. 19. Wm. Stace.

IMPORTANT SALE OF STOCK IN IRELAND.

On Monday, Nov. 1, the entire herd of improved short horned cattle, the property of Richard Fox, Esq., of Fox Hall, near Rathowen, Ireland, was submitted for public competition by Mr. Wetherell. Forty-six lots averaged more than 41*l*. each, the highest price given being 105 guineas for a heifer. The stock was in moderate condition, having suffered from the epidemic. The following are the prices realised:—

Lot COWS AND HEIFERS.

1. Splendid, roan, calved in 1835, 27 gs.—purchaser:—Fowler.
2. Julia, roan, calved, 1831, bred by Capt. Barclay, of Ury, 42 gs.—St. George Gray.
3. May Rose, roan, calved 1833, 50 gs.—J. Parkinson.
4. Moss Rose, roan, calved in 1832, 42 gs.—Tottenham.
5. Lilly, roan, calved in 1834, 50 gs.—J. Parkinson.
6. Mulberry, roan, calved in 1834, 42 gs.—Crawfurd.
7. Carnation, roan, calved in 1835, 50 gs.—Wetherell
8. Picotee, roan, calved in 1835, 50 gs.—Wetherell.
9. White Rose, calved 1837, 46 gs.—Wetherell.
10. Rosamond, red and white, calved in 1837, 40 gs.—Wetherell.
11. Red Rose, calved Sept. 22nd, 1838, 42 gs.—Wetherell.
12. Cowslip, white, calved 1838, 43 gs.—J. Parkinson.
13. Bilberry, white, calved 1838, 36 gs.—J. Parkinson.
14. Nymph, roan, calved in 1838, 50 gs.—Wetherell.
15. Redworth, roan, calved in 1838, 28 gs.—Hon. King Harman.
16. Maid of the Mill, 26 gs.—Ganley.
17. Beauty, 29 gs.—Ganley.
18. By Second Comet, out of a well-bred Cow. Not sold.
19. Strawberry, roan, calved 1839, 41 gs.—Wetherell.
20. Crocus, white, calved 1839, 70 gs.—Tuite, M.P.
21. Hyacinth, roan, calved 1839, 105 gs.—Wetherell.
22. Tuberose, roan, calved 1840, 66 gs.—J. Parkinson.
23. Fleur de Lis, roan, calved 1840, 40 gs.—Tottenham.
24. Cranberry, roan, calved 1840, 40 gs.—Tottenham.
25. Caroline, white, calved 1840, 40 gs.—Wetherell.
26. Anemone, roan, calved 1840, 62 gs.—Tottenham.
27. Wild Rose, white, calved 1840, 29 gs.—Lambert.
28. Rosalie, roan, calved 1840, 47 gs.—Parkinson.
29. China Rose, roan, calved 1841, 27 gs.—Tottenham.
30. Rose de Meaux, by Collard, not sold.
31. Miss Fleming, by Collard, 10 gs.—O'Connor.
32. Young Lily, 18gs.—Lambert.
33. Rosabel, 21gs.—O'Connor.
34. Rodanthe, 20gs.—Tottenham.
35. By Second Comet, 9gs.—Hon. King Harman.

BULLS.

36. Second Comet, roan, calved 1833, 24gs.—Power.
37. Collard, roan, calved Sept. 4, 1839, 80gs.—Lord Lorton.
38. Narcissus, roan, calved 1840, 60gs.—Burrows.
39. Rosart, red and white, calved 1841, 46gs.—Richardson.
40. Cowboy, roan, calved in 1841, 20gs.—Haggerty.
41. Snowdrop, white, calved in 1841, 30gs.—Tuite.
42. Welcome, white, calved 1841, 38gs.—Grabey.
43. By Collard, 13gs.—Edgeworth.
44. Rathreagh, 52gs.—Wetherell.

Bull calf, 16gs.—Boyd.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR NOVEMBER.

The first subject which unquestionably demands our attention in this report, is the immense quantity of rain which has fallen in the course of the month. That the excess of moisture has been great, almost beyond recollected precedent at any previous corresponding period of the year, no one, we feel assured, will attempt to deny; hence have arisen difficulties of no ordinary character, against which even the most skilful and most practised agriculturist has not been able to contend. In this respect, as indeed in many others, we come before our readers under no very cheering auspices; yet, and notwithstanding the accounts which have continued to reach us from most parts of the United Kingdom, but more particularly from our provincial districts, we earnestly conceive that, prospectively speaking, there is not so much cause of alarm as many persons have intimated. True, the saturated condition of the land has rendered the operation of wheat sowing one not only of difficulty, but, in many instances, of impossibility; while it is a fact that, up to the time we write, many farmers occupying heavy soils, even in those counties usually most forward, have not commenced that operation; and others, who may be considered fortunate enough to have sown a portion, complain loudly of the depredations of the slug, and the rotting of the corn before it vegetates; combined with this that thousands of loads of manure would have been carted for this golden crop could the fallows have borne the weight of the teams. If, however, we refer back to the year 1839, we shall find that, independently of an unusually bad harvest, many wheat growers were unable to sow scarcely a tithe of their corn before the latter end of December, and immense breadths intended for that grain were never finished. So far, therefore, we must not despair, as, if the weather should prove propitious during the greatest part of December, no reasonable doubts can be entertained of most of the winter wheats being placed in the ground. But should this not be the case, a genial spring may work wonders in the vegetable creation, especially as it has frequently been observed that spring-sown corn often yields nearly, or quite as heavy a return as that which has been drilled in the autumn.

The young grain plants which have come under our observation, have looked remarkably strong and healthy, with a degree of regularity truly pleasing to the eye; not only to that of the amateur in such matters, but also that of the practical man: but the switches have exhibited a comparative thinness, arising from a difficulty of finishing the major portion of the fields where situated in hollows, in a workmanlike manner. To revert to the slug, we would intimate that the best method we have ever discovered for its effectual destruction, has been that of throwing over the land, previously to its being ploughed, about 15 cwt. of slaked lime to the acre, as hot as it can be handled; which system has not only put a stop to the ravages of the insect, but prevented a recurrence of the evil in following years.

As relates to the present year's yield of wheat, accounts are extremely various; but the more general opinion seems to be, that it is certainly beneath an average, by about one-eighth: this, together with the inferiority of the samples offering in most of the principal markets in this country, has induced many persons to imagine that the quotations will rise far above those at present quoted. From what we have been able to learn, it may be fairly stated that they have reached quite their *maximum*; but any material depression—unless, indeed, the supplies now forthcoming should greatly exceed the consumptive demand—cannot with any degree of certainty be looked forward to. Good dry and heavy corn must, of necessity, command remunerating prices; but, for the secondary and otherwise out-of-condition sorts, terms must be low, from their forming the bulk of the receipts. Of late years, there has, certainly, been an inducement for a close attention to the growth of wheat; and we are happy to state, that many of the most extensive producers have intimated their intention of increasing the breadth of land under its culture this season, if circumstances permit. This is a point, the importance of which we wish to impress upon their minds, from the conviction, that it is by such means, and such only, we can make ourselves independent of the foreign grower. At intervals, both the flail and thrashing-machine have been in active employment, and large quantities of corn of all descriptions have been prepared for the various markets.

Barley is the next in rotation as claiming our notice; and we must state that fewer really fine sorts have been brought forward than we scarcely ever before recollect. This is accounted for by the bad condition in which it was secured, and to many of the storms which passed over us in the early part of August, laying most of that which was heavy in ear, and that which had an abundance of straw; consequently most of the parcels have proved very coarse and damp, with a difficulty in getting rid of them. As to its acreable yield, no complaints of consequence have been made, but it is far from being considered a good crop, or rather such a one as a farmer wishes to have in his possession; hence the quality of next year's malt must prove anything but satisfactory, and very high rates will doubtless be demanded for superfine parcels. Of all the white-straw crops, we should say that oats are decidedly the best, both as regards quality and quantity both of grain and straw; but the most abundant may be deemed the potato sorts, with which all have every reason to be satisfied. Both white and grey peas answer the expectations formed of them; but the haulm has been scarcely worth the expense of carting, from being spoilt by the rains. This is but of minor importance, when the large supply of inferior and damaged hay on hand is taken into the account. Mazagan beans have, as usual, turned out very profitable, as they are almost invariably carried somewhat earlier than other sorts. Ticks and horse-beans, which have produced a large quantity of straw, have not proved so good as the former, yet we cannot do otherwise than report favourably of the pulse crops as a whole.

The securing the mangel wurzel and other bulbous roots has occupied no little share of attention, and many light land growers have secured enormous weights. The wet has proved somewhat prejudicial to them, and great injury has been imparted to the land as well as the forthcoming crops, from the difficulty in carting them off.

Potato raising has gone on briskly whenever a chance has presented itself. In partial instances the rot has been discovered, yet the general crop is considered good, both as to weight and quality. This refers particularly to Scotland, Yorkshire, Essex, Devonshire, and the Channel Islands; from which quarters the receipts in the metropolitan markets have been much on the increase, and appear to suit the dealers remarkably well, at low figures.

We regret to state that the foot-rot in sheep, together with the epidemic amongst neat stock, has continued with almost unabated severity, and from which considerable losses have been sustained by the flockmasters and graziers. The versatility of the climate has no doubt produced much of the first-named disease, and too much caution cannot be exercised at this season in providing both beasts and sheep with dry resting-places, which will tend much to their complete restoration to health.

The growth of turnips appears to have been exceedingly great in some of the districts situate in the north, south, and east, with quality seldom or never equalled; hence a good supply of winter food has been secured for the stock.

By accounts from Scotland we learn that at length the whole of the crops have been safely stacked or housed, though in bad condition, especially as relates to those last secured. The growth of wheat does not appear to have come up to the expectations of the farmers: but that of other grain is well represented. Good wheat, in the various markets, has sold freely at full rates of currency; but in other corn a limited amount of business has been doing.

In Ireland a large quantity of rain has fallen, which has considerably retarded the progress of outdoor farm labours. Of the corn great complaints have been made by the growers, and a large surplus of inferior grain remains on hand. The best heavy wheat and oats have commanded a steady sale; but otherwise the demand has ruled dull. Potatoes have turned out remarkably well.

At the various markets of consumption in our provinces as well as at Mark Lane, the supplies of wheat on sale in the early part of the month were scanty, which produced a steady inquiry for that article, at improving rates. After about the 20th, the arrivals became extensive, owing to which the sale was heavy, at drooping currencies. The same observations may be equally applied to all other kinds of corn as well as pulse.

The following is our usual monthly statement of the supplies and prices of fat stock, exhibited and sold in Smithfield cattle market. The supplies of beasts have consisted of 15,290 head; of sheep, 99,400; of calves, 749; and of pigs, 1,830; while the prices have ranged as follows:—Beef, from 3s. 2d. to 4s. 6d.; mutton, 3s. 6d. to 5s.; veal, 4s. 4d. to 5s. 4d., and pork, 4s. 4d. to 5s. 4d. per 8lbs., to sink the offals.

The general quality of the stock has proved very inferior: and no small portion of the receipts from Lincolnshire, Leicestershire, &c., have been found suffering from the prevailing epidemic. The violent changes in the weather have also acted prejudicially to the sheep, which have experienced great difficulty, from their lameness, in reaching the different markets. The attendance of dealers have been numerous, while the demand has ruled somewhat heavy, and, in some few instances, lower rates have been submitted to by the salesmen.

Up to Newgate and Leadenhall markets, the arrivals of slaughtered meat from Scotland and different parts of England have been on a very moderate scale; but with meat killed in the metropolis, the above marts have been fairly supplied, and the following rates have been obtained:—Beef, from 3s. to 3s. 8d.; mutton, 3s. 4d. to 4s. 8d.; veal, 4s. 4d. to 5s.; and pork, 4s. 4d. to 5s. 2d. per 8lbs.

SOMERSETSHIRE.

Noticing some time since in the "Banker's circular," a statement that Dorsetshire never produced so much Wheat as this year, I was induced, from what I knew of the county, and connection with parties residing in it, to satisfy myself as to its correctness. For this purpose, a request was made to a party who, from his connections and pursuits, was likely to obtain correct information, without having any interest to serve in coming to any particular conclusion. The request was made October 27th. Reply received Nov. 11th, in allusion to the report:—"The person who made this report should come to me, and I would show him twenty individuals who would say very differently; for there is a very great deficiency in the yield of wheat this year. I should have returned this paper before, but I have tried to obtain the best information on the subject that I possibly could."

First question sent.—"Whether there was a larger breadth of wheat sown in Dorsetshire last year than there was the year before; and if there was, if it was any thing like one-third, one-fourth, or one-fifth, with any other remarks."

Answer.—"Near about the same as the year before, as most manage on the four-field system. If the season was wet it would not make so much difference in Dorsetshire, as it is mostly dry land, and the wheat was earlier than in some counties. This information I have from several other farmers."

Second question.—"How the wheat yields, and how much the deficiency is compared with last year; please to say how many bushels per acre there may be less than last year, taking the average of the county of Dorsetshire?"

Answer.—"Eight bushels per acre. This I had from several other farmers, both near and distant."

Third question.—"What is the average deficiency in weight per bushel compared with last year?"

Answer.—"Deficiency 2½lbs. per bushel, which is 10lbs. per sack. This also I had from several dealers, millers, and farmers, in Dorsetshire, both near and at a distance."

Fourth question.—"Is there much damage done to the clover seed with the late rain; any part quite destroyed—what proportion?"

Answer.—"Two parts out of four saved well and in good condition, and very fine seed; and of the other half (one-half taken bad) about a tenth part spoiled. The seed that is hurt with the rain will do for home use among the farmers, and the best seed will go to market."

As I have been travelling out of my own county in the above extract, I will only add further, that I have since seen parties in different parts of the county, from the writer, who fully confirm the above, with one exception, in one parish, who stated that last year there was much less straw, but it yielded well, but considered he had now got a better crop, but had *thrashed but little*.

I have since my last report for the county seen many growers, and their almost invariable statement is, the wheat does not yield near so well as expected; one-fourth to one-fifth less per acre, is not, I think, rating the deficiency too high. I find the light sandy soils are, if any thing, most complained of. Last year there was complaint of the wheat being thin on ground, but before this time there were scarce any complaints of the crop, and they were ready to acknowledge its being a good one, *but now there are more complaints as the season advance*, and I know that it varies in weight from 54 to 62lbs. against 58 to 64lbs. per bushel last year; and I believe a great deal *too much stress* has been laid on the larger breadth sown. In this county there were no doubt more acres, but where a more regular system is followed, the difference I believe will be found to be to less amount; whereas of the large quantity sown in the spring of 1840, the yield was remarkably good, and of the less portion sown at the same season 1841, it was altogether the reverse; from the lateness [of the season and from the wet we have had, the quality will shew a still greater difference.

Of the potato crop there is some difficulty in forming an estimation. In low situations a good many are entirely destroyed; out of the reach of the water, the crops are either very good or very indifferent, which causes a great variation of price, but a large bulk out this year are white, which are the best crops, and the high price of pork will cause a larger consumption of these; they are mostly secured, yet the late severe frost must have found many exposed. Our wheat sowing is about three parts over, of what will be sown this fall; a good deal must remain over to the spring. The wet is again set in, and our lands are very tender. Beef maintains its value, and the supply is not large. Mutton has declined a little in price. Pork advanced from 8s. 6d. to 9s. 6d. and 9s. 9d. per score. Stock cattle are full 3*l.* or 4*l.* higher than last year, with a quick sale. Sheep have gone down in price 2s. to 3s. per head, but are still high in proportion to fat.—Nov. 19.

YORKSHIRE.

The wheat seeding upon all the clay soils in this county has been difficult and protracted. Except a very few instances, where the seed was got in very early, the whole of the Vale of Cleveland, the extensive tract of Holderness, and other eminent wheat districts, were unsown the third week in October; saturated with wet, and scarcely any prospect of getting the seed in this autumn, at least. On the dry light soils, this naturally operated to extend the breadth sown; and as that operation could go on, notwithstanding the wet, on such soils, a very great breadth was sown on them, and "daubed in"—a circumstance as favourable to the prospects of the crop on light soils, as it is unfavourable on strong descriptions of land. The soft state of a sandy soil during the operation of sowing tends to assist its consolidation, and thus places it in circumstances most favourable to the growth of the wheat plant, which, most of all kinds of corn, requires a firm seed bed. Towards the close of October the rain ceased, and the last week in October and the first week of November were spring-like and drying days; so that quite unexpectedly, by sowing with pole-harrowing, and under furrows, many thousand of acres of the strongest clays were sown with wheat, under auspices not altogether unfavourable. This new demand for seed operated astonishingly on the market, by increasing the demand most unexpectedly; while the supply was diminished most materially, by every farmer being too much occupied with sowing to thrash much corn for the market. This circumstance, with the soft and unmarketable condition of much of the wheats, both in the extreme north and south of England, has tended to raise the markets to a point which they may never again attain before next harvest, and has raised an ignorant and senseless outcry respecting a deficient harvest, to inflame the public mind and raise a party agitation. The early sown wheats have made their appearance, and look very promising. Stock are generally placed upon the turnips, and they are found to consume fast beyond precedent—in very many cases the fields are already cleared, and sown, or preparing to be sown with wheat. Sad complaints occur in the low-land districts of the rot in sheep making its appearance, but not hitherto to the destruction of the flocks. The potato crop has been almost universally light—many have gone off by the dry-rot, but in quality they are generally good. In all cases they have been got up during the dry season, so that none of those grown will be lost from inability to come upon the land: they are selling at two shillings per bushel. The land on which they have grown is generally exceedingly foul. Preparations are actively made in making the land ready for wheat. Farm work, owing to the wetness of the season, is not forward, except the carting out of manure, which is always preferred being done in wet weather if it is not sufficiently fermented, as the wetness and lightness induced by it excites fermentation very rapidly. Markets generally, have an upward tendency; wheat, from the circumstances above alluded to. Barley is rising in price, and must do so—the quality is universally bad, and the quantity deficient. Stock are dear, and fat sells well. Cake seems to be uncommonly dear. Wool is bought very cautiously; purchases are made to serve the merest present demand; so that if trade should improve, a rapid demand and good price may be depended upon.—November 17.

CALENDAR OF HORTCULTURE FOR DECEMBER.

What the winter may be it is as yet impossible to foretel but certain it is that the first night of real frost (Nov. 15) produced ice of at least half an inch in thickness; the thermometer at 8 in the morning shewing 4 degrees below freezing point. Snow fell during the day and in the following night, so that it covered the fields and concealed the grass. Under such circumstances nothing could be effected, and if it continue in December, protective measures will form the gardener's chief employment.

If the weather be open, our directions at page 394, col. 2, will still apply, to which we add the following:—

VEGETABLE DEPARTMENT.

Celery—earth the rows, previously tying a strip of bass lightly round the plants near the extremity of the leaves, which ligature may now be left on: let the earth be dry, and broken very small, and bring it up to within five inches of the tops. If severe frost then occur, lay bean-stalks or pea-haulm along the ridges. Dig up a supply of the best bleached plants, and retain them under cover in not quite dry sand for use.

Cauliflower plants, under glasses or in frames; remove yellow loose leaves: give air during the day, but cover closely at night.

Sow early peas for succession—Mazagan, and long pod-beans. If the plants of previous sowing be up, draw a little light earth, carefully placing it ridgewise against the stems, and stick the peas with short branches of spruce fir, if *that* can be procured, for they afford excellent protection.

Salads—*i. e.*, mustard, cress, radish, in frames or in long boxes or troughs, in some temperate house at work; a warm vinery raises, successional supplies in a very few days.

Artichokes, not yet landed up, if frost supervene, can be very well protected by laying pea-haulm or litter of straw around each plant.

Mushroom-beds in the melon ground ought to be kept dry by deep coverings of straw, over which are placed—sloping like a roof—some well made straw hurdles.

Asparagus can be easily forced by solid, deep beds of tree leaves, upon which a two or three-light frame is placed, adding the requisite quantity of fine earth. Leaves answer equally well as stable-dung, and retain a temperate heat.

Sea-kail.—Another set of plants should be covered with pots and warm dung, to come in after those first excited. We prefer troughs made of slabs (extending over a row of plants 20 feet long) to pots: in every case it would well to cover each stool with six inches of river sand, or very light sandy loam; this would confine the kail, and make every shoot firm, white, and compact.

Trench and dig, if possible, every vacant plot; incorporating rotten manure where required, among the soil of the second spit below the surface, and laying the upper soil ridgewise above that.

FRUIT DEPARTMENT.

Neither plant nor prune. So far we repudiate all the directions of some old, but generally good writers: when nature is torpid, and the season adverse to every principle of development, we would neither disturb nor wound. On the contrary, protect the trees by mulching deeply around the stems; then lightly fork-dig borders and spaces between tree and tree, to destroy weeds and render the surface neat. Cover *fig-trees*, either with mats, straw ropes, or by interlacings of fir branches.

Examine the fruit in the fruit-room, removing such as is decayed. Keep all free from frost, and in the dark. Pears ought to be preserved in warmer situations than apples.

FLOWER GARDEN.

Cover all choice shrubs deeply with semi-decayed leaves; lay cakes of moss around the stems of rhododendrons, azalias, Kalmias, arbutus, aucubas, &c., &c. This material is very protective, and also congenial. Place auriculas-primulas, and all potted, hardy, flowering plants, in frames or close pits; because nothing, however hardy it be, can prosper so well if the soil in the pot become hard frozen. If pits be deep, or turfed all round, it will suffice to cover, during severe frosts, the glasses with mats and boards, giving air with the utmost freedom in dry, open weather. But if a brick-pit be entirely above ground, the walls should be protected by long rye straw, or *dry* litter a foot thick, retained in its place by strong stakes, interlaced with straw ropes.

The *greenhouse* must be attended to, giving air in dry days, and keeping out actual frost by moderate fires.

The *early Vinery* should be excited, first having laid leaves or manure a foot thick over the surface of the border. The fires ought to be gentle till the buds swell, and this they will do at a heat of 50°. Subsequently the temperature may be increased five, ten, and fifteen degrees; 65° being the maximum by fire at night, and 72° by fire during the absence of sun by day. One precaution ought to be observed. A vine stem within the house partakes of the genial temperature of the internal atmosphere; but a stem brought in from the outside is exposed to different temperatures. Therefore, whenever a vine is planted in a border, the entire stem ought to be enclosed, by building a brick trough all around it—open however to the air of the house; the wandering roots are safe under the covering above described; but the whole stem must be warm, otherwise the branches and their developments are liable to check from the perpetual variations of external temperature.

Pine Stove:—By this term, we always wish to imply the "fruiting-house." This ought to be a low erection, built extremely strong of the best bricks, the walls in every part nine inches thick, the sashes glazed with puttied laps, facing south, and having only a moderate slope. A good hot water apparatus should run all round, and the smoke flue the entire length of the back wall, so as to communicate its entire heat. There need be no tan in the pit of this stove. Sand will be a more pure material, and remain free from worms; powdered charcoal, kept moist, might be still better.

The large fruiting plants should be in pots No. 8, of rich mellow loam, pure, or mixed three months previously with rotted manure. This soil is, or ought now to be dry, the atmosphere cool, and every thing in a state of repose. This condition gives a check to growth, and renders all the juices of the plant highly mature; and in this state, fires being lighted and the temperature exalted to 75°, a quantity of water is to be given to each plant, sufficient to saturate the dry soil. The roots are thus stimulated, but the juices are in a condition to produce floral organs, and not leaves. In a word, the plant is ripe, and fruit is the result.

When, therefore, the stove is once brought into activity, the heat must be regularly kept up till the process of maturation be perfected.

In the *succession pits*, a moist, steady atmosphere of 65 degrees must be maintained by dung-linings, and close coverings during cold weather; for in the present improved practice, no check must be permitted during growth. Little root-watering is, however, allowed during the dark months, the gardener depending upon his dung-linings, heaped to the edge of the frame, for the necessary degree of moisture.

INSURANCE AGAINST HAIL STORMS.—We observe that notice has been given, that application is intended to be made to Parliament in the next session for leave to bring in a bill to incorporate a Company, by the name or style of "The Farmers' and Gardeners' Hail Storm Insurance Company," to enable the said Company to sue and be sued in the name of some officer or officers thereof, and to grant other powers and privileges to the said Company.

TURNIP HUSBANDRY.—The following extraordinary produce of turnips is to be seen in a field belonging to the Earl of Charleville, whose steward, Mr. Kidd, has been the means of introducing such an improved system of hunbandry on his master's property, viz.:—

	tons.	cwt.	st.	lb.
Yellow Aberdeen turnip.				
Quantity per acre statute measure	49	13	7	6
.. plantation measure ..	80	10	0	0
Yellow Tancred turnips.				
Quantity per acre statute measure	60	10	0	0
.. plantation measure ..	98	0	0	0
Swedish turnips.				
Quantity per acre statute measure....	60	10	0	0
.. plantation measure .	98	0	0	0
White Tancred turnip.				
Quantity per acre statute measure	79	18	7	8
.. plantation measure ..	129	10	0	0

The quantity of ground in this field is twenty-five statute acres. There is also a very splendid crop of purple Norfolk globes growing on the same farm. This is calculated to afford great encouragement to farmers to cultivate green crops extensively, for which the soil and climate seem so peculiarly well adapted.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ANDOVER SHEEP FAIR was held on Wednesday last. The quantity of Sheep was not large, and a satisfactory business was transacted. Although the trade was not particularly brisk, yet there was no difficulty in effecting sales, especially of the best description, and very few remained unsold. The prices were considered to be within a trifle equal to those obtained at the late Appleshaw fair. The Town Fair, on Thursday, for the sale of Hops, Cheese, &c., was well attended. The quantity of Hops offered was small, but few pockets being left unsold at Weyhill Fair. The prices obtained were as follow:—Farnham, 10*l.* to 10*l.* 10s.; Fine Country, 7*l.* to 9*l.*; Inferior, 5*l.* 10s. to 6*l.* 15s. A larger quantity of cheese was offered for sale than upon many recent occasions. In consequence of a dispute respecting the tolls between the Town Council and the dealers, the latter have refrained from attending our late fairs; it is, however, hoped that the parties will soon make a satisfactory arrangement, and that our Cheese Fair will be again liberally supplied. The greater part was disposed of on terms about as follow:—Best Somerset, 78s. to 84s.; second do., 70s. to 74s.; North Wilts, 60s. to 66s.; Half Coward, 48s. to 52s.; Skim, 28s. to 30s.

YORK MARTINMAS FAIR.—The annual cattle and horse fair was held on Monday last. In the cattle market the show of stock was extremely large and good—demand and prices quite equal to the supply. Incalvers and milch cows were much in request, and brought good prices to the owners. For heifers and steers the demand was also pretty good. The horse market was well stocked, but not with any very superior animals, the greater proportion of those being very inferior. Really good road and carriage horses commanded a ready sale, and good prices, but the others were scarcely inquired after.

DONCASTER NOVEMBER FAIR.—Our fair, held on Tuesday last, was well supplied with all descriptions of stock, especially steers, which were sold off at good market prices. Fat stock sold well at 7s. 6d. per stone. There was only a moderate show of cows and calves, for which high prices were asked. Incalvers met with a very ready sale at enhanced rates. Several excellent lots of Craven beasts were exhibited for sale, and sold well at good prices. There was a great number of sheep shown as is usual at this fair, consisting of several good lots of hogs, wethers, and gimmers; from 6½d. to 6¾d. per pound was about the average price for good mutton. Of horses there was a good number exhibited, but they were principally of an inferior description. Old horses met with a readier sale than usual.

HAWICK WINTER FAIR.—The show of cattle did not exceed half the usual number, and a good part of those in the market were of an inferior description. Good stirks, six quarters old, were in much request, and readily picked up at high prices. There were few two year olds shown, but they were also in demand. Milch cows were much sought after, and good early calvers sold quickly at great prices. There were a few lots of fat kyloes and other cattle, which were also selling well. Prices may be quoted as follows.—Stirks, six quarters old, from 6*l.* to 8*l.* and 9*l.* 10s, while some particular lots brought 10*l.* to 10*l.* 15s.; two year olds, 11*l.* 10s. to 12*l.*; milch cows, 16*l.* to 18*l.*; inferior, 10*l.* to 13*l.*; fat kyloes, &c., 6s. 3d. to 6s. 9d. per stone.

CHIPPENHAM MONTHLY MARKET, FRIDAY.—The first pitched market for corn was exceedingly well attended by both buyers and sellers: 415 sacks of wheat were sold readily at from 30s. to 35s. per sack, the average price being 32s. 9d.; 419 quarters of barley sold at from 31s. 6d. to 36s. per quarter; oats, 21s. to 30s.; peas, 18s. to 20s.; beans, 22s. to 24s. per sack. The supply of cattle was limited. The beef was not of prime quality, and sold at 9s. 6d. to 10s. per score; wether mutton, 6d. to 6½d. per lb.; ewes, 5½d. to 6d. There was a large quantity of cheese pitched, 65 tons, but the sales were dull; thin, 42s. to 52s. per cwt.; broad, 50s. to 56s.; truckles, 50s. to 60s. per cwt. Butter (milk), 1s. per lb.; whey, 10d. Fowls, 2s. 6d. to 3s. per couple; ducks, 3s. per couple; geese, 3s. 6d. each; eggs, 12 for 1s. There were 25 packs of wool exhibited, part as samples; they met a dull sale; mixed from 25s. to 26s. per tod, ewe from 21s. to 24s.

KENDAL.—The Kendal November Cattle Fair was held on Monday last. The number of cattle shown was extremely small when compared with previous years; consequently prices were high. The prices for spring calvers may be quoted at from 12*l.* to 15*l.*, but there were a few very superior animals which reached as far as 20*l.* There was a very contracted show of fat beasts, and those that there were, met with ready purchasers. The attendance of servants for hire was very numerous, and wages were on the decline. Good stout men obtained from about 6*l.* to 8*l.* for the half year, and those of more slender build and of younger years, from 3*l.* 10s. to 5*l.* Many of the servant girls were unfortunate enough not to obtain situations, and their wages on the whole were low. The horse fair took place on Tuesday last, and was attended by a large number of horses. The prices ranged from about 12*l.* to 18*l.* There were, however, two or three animals which reached 40*l.* In the evening, as is usually the case, "the halter for halter" dealing took place, which was carried on till late at night, and the business done in this description of horse was large. The murrain still lingers to a considerable extent among the cattle in this neighbourhood. At the fair on Monday last there were a great number of cows which were affected by it.—*Westmoreland Gazette.*

At YEOVIL FAIR, on the 17th, Down ewes sold from 24s. to 32s.; horned, 32s. to 38s. Lambs sold high, 18s. to 24s.; wether, 28s. to 35s. Beef, of which there was not a large supply, 9s. to 11s. Mutton, 5½d. to 6½d. per lb. The demand for wool is very languid, and the prices were almost nominal; there was a good deal in the farmers' hands. There has been of late a large supply of cheese, and a good deal changed hands, but at lower prices—50s. to 56s. new; and 56s. to 63s. per cwt. prime old. Bacon has commanded a good price, 6½d. to 7½d. by the side, per lb. Good prime samples of old wheat are getting very scarce, and such as 63lbs. per bush. are worth 9s. 6d.; there has not been for years a more complete exhaustion of the old stock; new is also very short supply, and is worth from 7s. 6d. to 8s. 6d. Flour, 50s. to 52s., with a brisk demand, and stocks light. Oats are in more abundance, and are worth from 18s. to 24s. per qr. Barley, of which there appears a good quantity, will do for malting, and much inferior grinding; the supply is not at present equal to the demand, particularly of the latter; prices range from 3s. 6d. to 4s. 3d. Beans are not yet plenty, and old ones do not sell as high as might have been expected; I may quote runs at 4s. 6d. to 4s. 9d. and 5s. 64lbs.; old, 5s. 9d. to 6s. 3d.

CAISTOR FORTNIGHT FAIR.—The quantity of both beasts and sheep was fully as large as was expected at this time of the year; both sorts had a slow sale, and sold for lower prices than at the fair.

AGRICULTURAL QUERIES.

"A subscriber" says, I purpose using my barley in feeding cattle in the place of oil-cake: what weight of barley is equal in nutriment to one ton of cake?

POTATOES FROM SEED.

A correspondent asks what are the means to be had recourse to for raising potatoes from what is commonly called the potato apple. If any of your correspondents would kindly instruct me what is to be done from the time the apples are gathered, I should be greatly obliged. A. B.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF NOVEMBER.

The month which has now been brought to its conclusion, was partly favourable to field operations, and a great part of the winter seed wheats has been got into the high lands in tolerably good order, considering the quantity of rain which fell during the preceding month. Since the year 1799, a greater quantity of rain has not fallen than has been the case in 1841; and it is only to the rapid progress which has been made in the science of agriculture during the last quarter of a century, that the absence of famine must at the present moment be attributed. The improvements which have been effected during that period in field cultivation, have not only prevented high prices for food, and all their concomitant evils, but bread has positively been kept at very moderate rates by the same cause. This furnishes another convincing proof of the universal benefit which agricultural operations at home confer on the community at large, and affords an unanswerable reason for giving every due and fair encouragement to the talents and property of those valuable and important characters who direct their attention to pursuits so patriotic as field operations most undoubtedly are. It is to the present corn laws that the people are chiefly, indeed, we may say solely, indebted for the advantages which they obtain from the present moderate rates at which bread can now be purchased; for without their protective influence, the beautiful and scientific manner in which the fields are now cultivated, could never have existed; and in a season so unfavourable as the last one most undoubtedly was, a great quantity of the food of the people must have been imported, as was the case in 1800, from foreign countries, and high prices must have been the natural consequence. This would, however, have been only a very minor evil in comparison with the injurious influence which an extensive importation of foreign grain universally has on the wages of labour themselves. Large importations of foreign food abstract the precious metals from the empire, render money scarce and dear, cause the postponement at all events of all undertakings of enterprise, make productive employment scarce, and ruinously reduce wages. That the existing commercial and manufacturing distress has its origin in this source admits not of any contradiction; and official returns clearly prove that the consumption of goods is decreased in proportion to the increase of foreign grain imported. For instance—

DUTY WAS PAID IN THE UNITED KINGDOM.

	On Wheat. Qrs.		On Flour. Cwts.
From 13th Sept. to 15th Oct., 1838	1,444,871	..	254,931
From 10th Oct., 1838, to 5th Jan., 1839.........	271,213	..	90,467
From 5th Jan., 1839, to 5th Jan., 1840	2,521,979	..	665,045
From 5th Jan., 1840, to 10th Oct., 1840.........	2,003,585	..	1,183,925
From 10th Oct., 1840, to 10th Oct., 1841.......	3,292,943	..	1,638,026
	9,534,591		3,832,394

Wheat and flour, therefore, to the value of at least twenty millions sterling were imported during the last three years from foreign nations; still the decline in the value of exported manufactured goods in the year 1840, was little short of one million and a half sterling; and in the present year, there is much reason to fear that the deficiency in our export trade will be found to be still more material. The experience of a virtually free corn trade during the last three years, therefore, does the reverse from establishing the Anti-corn Law doctrine of a barter trade being the necessary result of the repeal of our corn laws. The foreign grain consumed here during the last three years has most certainly not been paid for in articles of British labour, exported *direct* to those foreign nations and states from whence the corn was imported. On the contrary, these importations have been more detrimental to the wages of labour than they have been to the value of agricultural property itself, in as far as they have been the means of withdrawing from the circulating medium large sums of money, remitted abroad in payment for foreign food, from whence it returns no more. The home consumption of manufactured goods, and of various other home productions of industry, is much contracted by the scarcity and consequent dearness of money at the present moment, thus materially injuring all classes in the United Kingdom. Had the money which during the last three years was remitted from this empire in payment for foreign grain, been paid away to our home farmers, it would never have been for one moment subtracted from circulation, but it would have been employed at home in commercial, speculative, and agricultural improvements; and, by increasing the field for productive and profitable employment, it would have influenced the value of wages, and in a material degree improved them: for it is a self-evident fact, that an abundant growth at home of all the necessaries of life must, from necessity, be speedily followed by an increase in the wages to be paid to the industrious and operative classes in society. This is universally the case when the value of food is reduced by luxuriant crops at home; and the reverse as certainly arises from excessive importations of it from foreign nations. Low prices of food, and high wages for labour, can thus alone be obtained from the farther improvement of our own soil. A perfectly free trade in food with foreign nations can, under no circumstances whatever, be ever attended by such beneficent results. The cultivators of the finest wheat districts without the United Kingdom are serfs, slaves, or boors, who are perfectly ignorant of the luxuries of life, and know quite as little of its comforts. The use of British manufactures amongst the great proportion of them, is entirely out of the question. They have generally no interest whatever in the wheat crops which are sown and gathered by their labour. To them it matters not whether the seasons be favourable or the reverse—whether the British corn laws be continued or be repealed. In neither case would the slightest alteration be made in their lowly—we do not say *unhappy*—condition in life. They are not in a condition to possess the means to consume the manufactures of Leeds or of Manchester; and the payment for their produce must therefore be made to their notables and masters, chiefly in the precious metals. To consume foreign corn in the United Kingdom is thus rendered injurious to the manufacturing interests in proportion to the extent of that consumption, for it deprives the farmers of the means to use that amount of goods, which, under more propitious circumstances, they most undoubtedly would do; and the home market therefore for manufactures is most materially curtailed by the consumption of foreign food, when any convulsion of the elements renders such a calamity necessary. The complaint made by the Anti-corn Law leaguers that our farmers grow corn too dear, is manifestly wrong, because we find no large fortunes made amongst the followers of that most useful profession. Whatever they receive in payment for their crops is almost immediately afterwards put into circulation amongst the industrious classes of society. Their labours are directed towards the improvement of the soil, and the consequent happiness of the great mass of their fellow subjects. The corn laws, however, are absolutely necessary to the accomplishment of the objects which they have in view, and for this object they are admirably adapted. That they are at the same time open to a few improvements we freely admit; and we expect that her Majesty's ministers will, early in the next session of Parliament, bring this important subject under the consideration of the legislature.

A little alteration in the details and in the working of these laws, will bring them as nearly to perfection as any thing human can be rendered; and will greatly contribute towards the increase of the public wealth, and towards the prosperity of trade and manufactures. By rendering them as perfect as circumstances will permit, agricultural improvements must continue to progress; and eventually sufficient food for the consumption of a larger population will be grown at home. Under the existing corn laws, a large proportion of our soil at present produces at least one-third more per acre than it did twenty years ago; and so long as public protection is extended to the cultivators of our own corn fields, the progress of production must continue in a still more extensive manner to increase. The expenses of living will then remain in the country, and will furnish productive labour in abundance to the entire population, of whatever numbers it may be composed. This season affords most satisfactory proof of the rapidly increasing fertility of the British and Irish soil; for, as we have already mentioned, a more unpropitious season for the wheat crop has not occurred in this country since the close of the last century; and yet our farmers are enabled to deliver grain rather liberally than otherwise, which, with the assistance of the two millions of quarters of foreign wheat and flour entered for home use in September last, keeps, and will for months probably yet to come continue to keep, the price of bread moderate to the great bulk of its consumers. We have only to reflect on the great quantity of land already under tillage, amounting to upwards of forty millions of acres, to be morally convinced of the capability of the United Kingdom to maintain three times her present population, as the cultivation of the land progresses towards perfection. In this channel great abundance of productive labour must continue to be found for the people; indeed its value must annually be on the increase for ages yet to come. When the season is favourable, by means of the great progress which the science of agriculture is annually making, we even now produce at home more than enough for our present population; and certainly the production of grain fully keeps pace with the increase of the people. Even under unfavourable circumstances, such as the last crop most assuredly was grown under, our home farmers are at present able to dispose of their wheats at prices certainly far from being too high for the general rates of wages now payable for various descriptions of employment, and yet sufficiently dear for their own remuneration. This admirable system in British society can alone be attributed to the excellent manner in which the corn laws protect the industry of all classes, whether they be engaged in trade or in agriculture. The distress which most unfortunately prevails in the manufacturing districts has been created by the dearness of money alone, which has been rendered scarce by the necessity of remitting largely to foreign nations in payment for foreign grain during the last three years. This is the real root of the partial evils which are now afflicting the manufacturing and commercial classes—the means for their employment being at present limited by this unfortunate state of money affairs. The elements have however rendered foreign supplies of grain necessary; and if the payment of upwards of twenty millions sterling to foreigners in the short space of three years for these supplies, has not created a correspondent increase in the exportation of manufactured goods, most assuredly the total repeal of the corn laws, or the fixing of the same rate of duty at all times and under all circumstances on grain when imported from abroad, never can create that barter trade which apparently, therefore, has no habitation, unless it be in the heads of the leading members of the Anti Corn-Law League. Indeed, these gentlemen begin visibly to feel that their cause is almost hopeless; and they, like drowning men, catch at straws to save themselves from sinking. In our last review of the state and prospects of the corn trade for instance, a misprint occurred of *ten* millions of quarters instead of *two* millions having been entered in September last for home consumption; and of this most obvious *mistake in the press*, the *Manchester Guardian* has availed itself to make what it considers a grand attack on us for the ignorance which we have displayed on the subject of the corn laws generally. The writer in the *Manchester Guardian* however stands convicted either of wilful misrepresentation, or of flippant carelessness upon a subject which he feigns to treat as one of a most important kind. The misprint in question is corrected in the next page by a repetition in which the word *two* is used, and which he must have known to be correct had he read it.

The artisans and productive labourers generally, are well persuaded that their wages are always reduced in proportion to the quantity of foreign grain used in this country; and that, on the contrary, when the expenses of living are reduced by an abundant harvest at home, their wages are also raised by that fact alone. There exist at present, appearances that the last crop may not be so materially deficient in quality as was lately supposed; for, during the last month at all events, the condition of the new wheat was improved by the coldness of the weather—though this benefit no doubt is gained at the expence of quantity; and in prices there has been a proportionable improvement, and the duty on importation has declined. Moderate, however, as the prices of the necessaries of life have been hitherto kept by the annual and great improvements in agriculture at home, and by large importations of foreign grain which came into consumption in the month of September last, still a general opinion continues to be entertained that a farther large quantity of foreign wheat will be required before the close of the present corn season. This will be a most unfortunate circumstance should the event confirm the existing opinion, for it will materially increase the existing distress amongst the productive labourers, by farther decreasing the rates of wages received by them at the present moment. There is, however, abundance of grain to be found in Europe, and in America, for the supply of all our wants. The only difficulty will be to find money to pay for it. Already we learn by our advices from the ports within and without the Baltic sea—by letters received in due course of post—that large orders for wheat have been executed, to be shipped as soon as the navigation of the river is again opened in the spring; but the prices for the finest are higher than the value of wheat at present in this country justifies; and these purchases, therefore, must have been effected with a view to a material reduction in our import duty taking place during the ensuing spring or summer months, and not from any prospect of prices here rising to unusually high rates. At Dantzig, the best high mixed Polish wheats purchased for shipment in the spring, would stand at upwards of 63s. per qr. on board ship; and at Hamburgh, the rates demanded were higher than the above, taking quality into consideration. The Prussian land proprietors, and the noblemen of Poland, are thus reaping a rich harvest from the present state of the English corn markets, and are ardently desiring a continuation of it by the entire repeal of the British corn laws. Foreign grain dealers also like the state of the corn trade well; but amongst numerous letters from many of the continental merchants which we have perused, the idea of a barter trade in their agricultural produce and our manufactured goods is held in perfect ridicule. They cannot comprehend the principle of political economy, which would transfer a considerable portion of the productive cultivation of the fields to foreign field labourers, from our own; complaining as the corn repeal advocates do at the same time, of a superabundant population existing in the United Kingdom, and demanding the annual transportation of many thousands of them to the colonies, there to be employed in the cultivation of lands in a far more savage state than several millions of acres are to be found, although also in a perfect state of unproductiveness, at home. Foreign corn merchants cannot comprehend the advantages to be gained by us by the repeal of the corn laws; but at the same time they ardently desire their abrogation, for the benefit of their own land proprietors, and for the increased annual incomes which their agents would obtain from the execution of corn orders for the British markets. As soon as the internal navigation in the Baltic and in the north of Germany is opened in the spring months, our corn merchants will import quite as much as the demand will require, and a great deal more than we can conveniently pay for; and thus another drain on our stocks of the precious metals, we repeat, will take place; money will consequently become even more scarce and dearer than it is as present; agricultural, speculative, and commercial improvements will be in many cases suspended, and wages will be farther depressed. This, we again repeat, most probably will be the consequence of the late unpropitious weather for the gathering of the crops; and most undoubtedly must annually be felt, should, by any act of national insanity, the corn laws be repealed, or a fixed rate of duty be imposed on the importation of foreign grain.

In the ports of the Mediterranean and Black Seas, considerable purchases of wheat have likewise been made at moderate prices; and, inasfar as shipping could be obtained, a rather large quantity, at the latest advices, must already be on the passage to this country. The voyage from these seas is uncertain in its duration, and the risk of heating on board ship must always render corn operations dangerous. Still, to remove the protection which the law at present extends to agricultural undertakings at home, would render certain the importation annually of large quantities of wheat even from these distant regions, at far lower prices than we can afford, under the present system of society, to produce it for at home. The reduction in the value of wages which this alteration in the corn trade would in a short period occasion, would render one penny per lb. for bread far dearer to the industrious classes than threepence per lb. is under the present admirable manner, in which the wages of labour and the produce of our own fields are mutually protected by the existing corn laws. The people generally understand their workings well; and the Corn League lecturers consequently receive from them not the slightest attention beyond that which they pay to *Punch* when they meet him in the streets. They enjoy their laugh, and return home contented with the amusement and exhibitions on these occasions placed before them.

From the United States of North America the information received respecting the corn trade is to the middle of last month, but it is not important. Flour chiefly continued to be forwarded to Europe in considerable quantities; and could our transatlantic brethren only prevail on Englishmen to take their food in exchange for labour, the Americans promised to themselves great and important advantages from an alteration in the legitimate principles of trade of this description. They are ready to undertake the pleasing and healthful labours of cultivating the fields, whilst John Bull is to labour in the mines like a Peruvian slave, or to hammer hot iron before a furnace, in exchange for his food, entirely for the benefit of his liberal employers. A gentleman from the banks of the Ohio is now lecturing in the manufacturing districts; he knows what is good for the inhabitants of the British empire far better than they know themselves, and assures them that so long as their health permits them to labour like horses, like that useful animal they will be supplied with provisions in proportion to the work which they may be able to perform in this—the great workshop of the world. American flour and American salted beef will certainly be a treat to John Bull; for it will be a change from the monotony of being continually obliged to eat fresh beef, as he now does, under the present system of protection which his wages and his food receive from the admirable principles of the corn laws. This condition in life, however, Englishmen prefer to the change which foreigners and corn law lecturers would confer on them; for after all the promises made by Mr. Curtis in favour of his countrymen, no importation of American grain and of American provisions, would be attended by any adequate exportation of British manufactured goods in exchange for them. The American population, like that of the United Kingdom, is annually increasing, and the want of capital renders the employment of the surplus of them far more difficult than it is in this country. In manufactures, therefore, for their home consumption, many of them must in future find employment; and under such circumstances it is not very probable that the predictions of Mr. Curtis can be fulfilled, should his promises to the British manufacturers even have been seriously made. To give and take, is the real foundation of all descriptions of commerce; and this principle is now followed out, and always must be, to its fullest extent. America continues, and will continue, to take from us that quantity of our manufactured goods which her inhabitants can conveniently consume, and we will continue to take as much American tobacco, cotton, wool, and grain as our actual wants require; but most certainly we can never consent to put our agricultural labourers out of employment for the purpose of employing those of foreign nations, even although *apparently* they should produce grain cheaper than can be done in the United Kingdom.

Little animation has been observable in the barley trade since our last publication. The supplies in the various large markets of consumption have not as yet been in any degree abundant, but still they have been more than the consumption demanded. The quality of the greatest portion of these supplies has been of an inferior description, and prices have consequently been rather on the decline during the whole of the month. Although the quantity suitable for malting purposes has been small, still no improvement can be noted in the value even of this description; and the reason must be very obvious to all who feel interested in the prosperity of the barley producer, and of the proprietor of light soils. We have frequently endeavoured to direct the public attention to the large revenue which is annually collected on manufactured barley, amounting, as it does, to very little less than one quarter of the public expenditure. Of the gross sum paid into the Treasury from this source we do not complain; it is by the manner in which it is imposed that both the consumer and the barley farmer suffer. The cause of the present dulness in the sale of malting barley arises from this annual falling away in the quantity of barley converted into malt; and this decay in consumption must continue to exist until some very material alteration be effected in the malt duty charge, and in the mode of its collection. The wants of our increasing population demand such a change as may increase the consumption of beer, and this can alone be effected by a reduction in the rate per quarter at present levied on malt. Under the existing system, the public brewers consume only four millions of quarters of malt annually; and the extract from this quantity, brewed as weak even as beer by any possibility can be made, is short allowance indeed, if divided amongst the entire population. The fact is, that the high duty presents temptations for adulterating the people's beer, which in few quarters indeed can be resisted; and thus a public fraud is played on the consumers, and the public health is also very materially injured. By the removal of the cause alone can this evil be removed; the reduction of the malt duty to 1s. per bushel, will perfectly effect the objects which we have in view. It will increase the amount paid into the Exchequer by the malt duty. It will double the consumption of barley by the maltsters; and it will triple the enjoyments which the people receive from the consumption of beer. When the malt duty was 34s. 8d. per qr., the sum paid into the revenue never reached three millions sterling annually. Two years after the duty on malt was reduced to 20s. per qr. at the recommendation of the Duke of Wellington, six millions of quarters of barley were converted into malt. The necessities of the state within the last four or five years, have induced the Chancellor of the Exchequer again to add to the public charge on it; and the natural consequence has been the gradual reduction of the quantity of barley malted to its present state. The reduction of the malt duty, we repeat without any fear of contradiction, must in a few years at least double the consumption of malt, and increase the nation's wealth by the cultivation of at least two millions of acres of light land now in a state of absolute unproductiveness, in addition to the quantity of land at present under barley cultivation. The wealth that would naturally be gained by bringing into utility two millions of acres of at present useless land, would do much more than pay for the expense which a doubled consumption of beer would require, and not one evil consequence could arise from the alteration to which we now allude. But it is not only in malt that this country suffers by the bad manner in which Sir John Barleycorn is used by our rulers; for he is in a proportionable degree injured by the existing system of distillation practised in England. When barley is distilled into spirits, a duty of upwards of three hundred per cent. is charged on the original cost of the spirits; and the consequence is, that at least eight millions of gallons of spirits are annually consumed in England alone, on which not one farthing of duty is paid into the public treasury; and in the distillation of which, at least half a million of quarters of grain would be required, were this quantity made within the United Kingdom. In Scotland and in Ireland, the duty on home-made spirits is moderate, and the Treasury suffers nothing by this moderation; nor are smuggled spirits in common use now amongst the people in either of these kingdoms. No good reason can be given why the public charge on home-made spirits should be dearer in England than it is in Ireland and Scotland; and to reduce the one to 5s. per gallon, and to increase the other two to the same rate, would be a public advantage to the community; for the alteration would increase the revenue at the smuggler's expense—in whose illegal trade drunkenness and teetotalism, the two vices which take their stations on each side of the great virtue of temperance, mainly have their origin. Destroy only the nest of smuggling, and the crimes hatched in it will perish at the same moment. To encourage the consumption of foreign brandies and Dutch gin by a material reduction in the duties now chargeable on these articles, would be the worst policy possible; for it would be encouraging the foreign at the expense of the home distiller. On the spirits manufactured however in our colonial possessions, a reduction in the duty should be made, in proportion to that made in England; for the interest of the colonies is, in a national point of view, the same as that of the native soil itself. A farther injury is done to the barley producer, to the English distiller, and to the rectifier in England—which exists not in Scotland, Ireland, nor in the colonies; and its removal is not only easy, but would also be attended by important advantages to the empire. Scotch and

Irish whiskey, colonial rum, French brandy, and Dutch Geneva, are permitted into consumption in England, *and very properly too*, at those strengths which suit best the interest of the proprietor and the palate of the consumer; whilst English rectified spirits are not allowed to be sold until their strength be reduced to at least seventeen under proof. This unaccountable defect in the distillery law is an obstacle in the way of the rectifier of British brandy arriving at that degree of perfection in the manufacture of his article which he otherwise would reach, were a remedy applied to it; for it is perfectly well established now, that the home-made brandy distiller already produces a rectified spirit far more wholesome than the great proportion of foreign brandies are, even when legally imported; and it only requires strength to equal in flavour the best brandies manufactured in the south of France. Did government only permit this alteration in strengths, home-made brandy would in a few years supersede the consumption of French brandy, as whiskey has done that of Dutch Geneva; and that large sum of money would thus be retained within the Empire and employed amongst the industrious classes, which is, under the existing system of absurd restrictions, annually remitted abroad in payment for foreign spirits.

The large markets for the consumption of oats have been abundantly supplied with that article since our last publication, and in prices a trifling decline has occurred. The quality of these supplies has certainly not been so fine as could generally have been wished, but quantity, in a considerable degree, has made good this defect. The rapid progress which the science of agriculture has made in Ireland during the last twenty years, is the chief cause of the present moderate value of this article; the great proportion of the consumption in Great Britain being now imported from that part of the United Kingdom, instead of from Lincolnshire, the northern counties in England, and the eastern coast of Scotland, as had previously been the case. These districts are now chiefly under wheat instead of oat tillage, and are annually rendering us less dependant on foreign nations for supplies of wheat. Without the protection against foreign competition which the corn laws have given to agricultural pursuits in Ireland, these important advantages could not have been obtained, and they must cease, should this protection ever be withheld from the agricultural interest of the United Kingdom. Under the present system, much agricultural employment is given to the Irish peasantry, and their wages are continually kept in circulation amongst the other industrious classes of society; but only repeal the corn laws, or impose a fixed duty on oats when imported from abroad, and these important benefits will all be lost, without the introduction of a solitary advantage to supply even the smallest portion of the injury. From Tonningen, Emden, Bremen, Leer, and numerous other ports in the European continent, we should be supplied with oats much cheaper than we can import them from Ireland, or even from the north of Scotland; and the employment now given, and the wages now paid, to the labourers at home in the tillage of oats, would be transferred to the landlords and boors inhabiting those large corn districts in the north of Europe. Millions sterling would annually be remitted abroad in payment for oats; and we are morally certain that this freedom in the oat trade would not be the cause, in the slightest degree, of increasing the quantity of manufactured goods at present exported to these parts of the European continent. Besides these disadvantages, however, a free trade in oats would materially damage the shipping interest. At present they are brought into the different places of consumption entirely under the British flag. The trade in them employs many thousands of British and Irish seamen, and gives remuneration to large sums of money embarked in the coasting trade. Only change the existing principles of the corn laws, and this field for employment must in a great measure be taken away from those connected with or employed in the commercial navy, and the oat-carrying commerce would be transferred from the British to foreign flags; but the thing is positively so perfectly absurd, that to say more about it at present is perfectly unnecessary—for the last crop of oats grown at home will be found sufficiently large for all our wants until another harvest of them be produced for the public good.

CURRENCY PER IMP. MEASURE.

NOV. 22.

	Per	Qr.		Per	Qr.
WHEAT, Essex and Kent, red 58	60	64	White 66	70	74
Irish	50	56	Do.	60	62
Old, red	—	—	Do.	—	—
RYE, old	34	36	New	36	38
BARLEY, Grinding 28 32 Malting	34	36	Chevalier	35	38
Irish	26	27	Bere . 23	25	26
MALT, Suffolk and Norfolk	62	66	Brown	50	54
Kingston and Ware	62	66	Chevalier	66	68
OATS, Yorksh. & Lincolnsh., feed	24	26	Potato	27	28
Youghall and Cork black	22	23	Cork, white	24	25
Dublin 21	22	24	Westport	24	25
Waterford, white	20	23	Black	22	23
Newry	24	25			
Galway	20	21			
Scotch feed	25	26	Potato	27	28
Clonmel	23	25	Limerick	22	26
Londonderry	23	24	Sligo	22	23
BEANS, Tick, new	30	35	Old	—	—
PEAS, Grey	36	38	Maple	40	42
White	38	42	Boilers	40	44

SEED, Rape...... 36*l.* 40*l.* Irish..32*l.* 34*l.* per last.
Linseed, Baltic....48 56 Odessa 60
English Red Clover.... — — per cwt.
White .... — —
Mustard, White 15 — brown 15 16 per bush
Tares, old .... 30 36 new 56 60 per qr.
FLOUR, Town-made 65 — Suffolk — 53 pr sk. of 280 lbs.
Stockton and Norfolk, — 52

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	60	64			
Hamburg	54	56			
Rostock	50	54			
BARLEY	22	24			
OATS, Brew 19	20	22	Feed	14	16
BEANS 24	26	28			
PEAS	28	33			
FLOUR, American, per brl	34	—	Baltic	54	—

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Nov. 19th, 1841.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, Nov. 20th, 1840.	s.	d.
WHEAT	66	4	WHEAT	61	8
BARLEY	33	4	BARLEY	34	7
OATS	22	8	OATS	21	11
RYE	40	2	RYE	35	8
BEANS	40	11	BEANS	43	10
PEAS	41	3	PEAS	42	0

IMPERIAL AVERAGES.

	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
Week ending												
Oct. 8th ..	61	6	31	10	21	7	35	10	40	5	38	1
15th ..	62	3	31	6	21	8	38	3	38	6	38	6
22nd ..	63	6	31	5	21	9	35	0	37	11	39	7
29th ..	64	5	31	7	22	0	39	0	40	4	38	8
Nov. 5th ..	65	5	32	8	22	0	38	7	40	4	40	8
12th ..	66	4	33	4	22	8	40	2	40	11	41	3
Aggregate Average of the six weeks which regulates the duty........	63	11	32	1	21	11	37	10	39	9	39	6
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	23	8	13	10	15	3	14	0	11	0	11	6
Do. on grain from British possessions out of Europe............	0	6	0	6	2	0	0	6	0	6	0	6

PRICES OF SEEDS.

Nov. 22.

During the past week there was a good speculative enquiry for red Clover, but owing to holders being mostly unwilling to realize, the actual transactions were not important; to-day the trade was in much the same state, and it is scarcely yet possible to give correct quotations. There was a good show of Canaryseed, which moved off in retail at from 84s. up to 100s. per quarter. In other species of Seeds no alteration occurred.

Linseed, English, sowing	54	59			
Baltic	—	—	crushing	48	54 per qr.
Mediter. & Odessa	50	54			
Large, foreign....	—	—			
Hempseed, small........	40	45	large ..	48	50
Coriander..............	10	16	old....	16	18 per cwt.
Mustard, brown, new ..	10	14	white..	9	13 pr. bush.
Trefoil	16	28			
Rapeseed, English new..	36*l.*	40*l.*			
Rye Grass, English......	30	42	Scotch	18	40
Tares, winter	—	—	New..	6	7s 6d
Canary, new............	85	90	fine	95	100
Carraway, old	50	52	new	48 49	52

PRICES OF HOPS.

BOROUGH, Nov. 22.

The official hop duty has not been published yet, although last year it was out on the 18th November. In the meantime there is a very dull market, and speculation does not appear to be thought of, the only purchases being for actual and pressing wants. The estimated duty by private backers is £140,000 to £145,000. In the currencies of hops there is no alteration since last week.

	East Kent.	Mid. Kent.	Weald of Kent.	Sussex.	Farnham.
	s. s.	s. s.	s. s.	s. s.	s.
Bags, 1836	Nominal	—	—	—	—
Pocks. 1836	—	—	—	—	—
Bags 1838	Nominal	—	—	—	—
Pocks. 1838	—	—	—	—	—
Bags 1839	80 .. 95	80 .. 95	80 .. 95	80 .. 95	—
Pocks. 1839	—	—	—	—	—
Bags 1840	100 .. 115	100 .. 115	100 .. 115	100 .. 115	—
Pocks. 1840	—	—	—	—	—
Choice do.	112 .. 126	112 .. 126	112 .. 126	112 .. 126	—
Bags 1841	155 .. 185	150 .. 160	—	—	—
Pocks. 1841	140 .. 200	140 to 180 to 190	115 .. 140	115 .. 130	—

POTATO MARKET.

SOUTHWARK, WATERSIDE, Nov. 22.

The supply of potatoes to the port of London during the past week is the largest that has arrived this season, viz., from Yorkshire 1605 tons, Scotland 2360, Devonshire 770, Jersey and Guernsey 740, Kent, Essex, and Suffolk 675, Wisbeach 90, Ireland 60, total 6300 tons. Many samples having been shipped in wet and dirty condition, and encountered rough weather at sea, causing injury from salt water, several cargoes have arrived in such a rotten state as to be quite unsaleable, and others obliged to be sold at greatly reduced prices. The buyers are consequently very sparing in their purchases, except for the best and cleanest samples. The weather very mild with rain causes a continued supply of green vegetables to the London markets, and makes sales heavy.

PRESENT PRICES AS ANNEXED.

	s.		s.	
York Reds......................	70	to	—	per ton
Scotch	55		60	
Devons...	60		—	
Jersey Whites	45		—	
Jersey and Guernsey Blues	50		–	
Kent, Essex, and Suffolk Whites..........	50		55	
Wisbeach	45		—	
Irish	50		—	

WOOL MARKETS.

BRITISH.

Nov. 22.

There has been only a small amount of business done, and that at about late prices. On the whole, however, the market is buoyant, the supply being very small, as the farmers are in general dissatisfied with the present market prices, and are asking more money than the dealers can make.

The American news is favourable rather than otherwise, but is counterbalanced by the many failures that are taking place at home; on the whole there seems to be a likelihood of a moderate amount of business being transacted at about recent prices, and this will, in the long run of events, be better than any considerable fluctuation in the prices, which only deludes people on to large speculations and speedy ruin.

The Flannel department of the business is in a very depressed state just now, and no possibility of getting a profit at the present prices exists; but the stock on hand has been very considerably diminished of late, and no further decline in flannel Wool need be expected. Indeed rather better prices have been realised within the last few days.

The Stuff department on the whole may be considered as improving.

Blanket Wool is rather dull of sale, although the stock is much diminished.

	s.	d.		s.	d.
Down Teggs	1	0½	to	1	1
Half-bred Hogs	1	0½		1	1
Down Ewes and Wethers		11			11½
Half-bred Wethers..............		11		1	0
Leicester Hogs		11½		1	0
Down Wethers....................		9½		0	10½

LEEDS, Nov. 19.—Sales this week have been to supply the immediate requirements of the manufacturers, which, owing to the season, are small. In combing Wool, low and middling wethers still go off more readily, and at better proportionate prices than the finer qualities. Prices may be quoted about the same as last.

FOREIGN.

CITY, Nov. 22.—Since the termination of the Colonial Wool sales there has been a fair business doing in the market, and the prices have been supported. The Woollen manufacture is said to be rather brisk in the North, and if this continues the market for the raw staple is sure to be supported.

The imports of Wool last week were 1113 bales, all from foreign ports, viz., 346 from Taganrog, 305 from Germany, 274 from Russia, 101 from Spain, and the rest from Italy and Buenos Ayres.

Advices from the fair of Brody, to hand by the Hamburgh mail, state that the sale of manufactures had been dull.

Accounts from Paris state there was very little doing in Wool, but that some goods sold freely. Some few sales of German ord. Wool had been made, at 5f. 25c. to 26c. per kil.

PRICES OF SHARES.

No. of Shares.	IRON RAILWAYS.	Price per Share.	Div. per Share per Ann.
6,228	Birmingham & Derby Junc. 100l sh	—l a 0l	
6,228	Ditto ⅓ shares ...... 25l sh 20l pd	0la0l	
9,500	Ditto and Gloucester .... 100l sh	57la9l	
9,500	Ditto Quarter Shares...... 7½l pd	4½la5½l	5l per ct
15,000	Bristol and Exeter..100l sh 60l pd	27la9l	4l per ct
9,300	Ditto and Glouces.. 50l sh 5l pd		
7,500	Cheltenham & Great West. Union 100l sh 62½l pd	-l a0l	
3,000	Clarence (Durham)........100l sh	—l a0l	
64,000	Eastern Counties ....25l sh 23l pd	7½l a8l	
64,000	Ditto Debentures of .. 8l 6s 8d..	9l 16s 8d	5l per ct
18,000	Edinburgh & Glasgow 50l sh 40l pd	—la0l	
10,918	Grand Junction ....100l sh	185a0l	13l per ct
10,918	Ditto Half Shares..........50l sh	92½l a0l	13l per ct
10,918	Ditto Quarter Shares 25l sh 2½l pd	24l a0l	1l
10,000	Great N. of England 100l sh 90l pd	—la0l	5l per ct
25,000	Great Western .... 100l sh 65l pd	78½la9½l	3l per ct
25,000	Ditto Half Shares..........50l sh	56¼l a¾l	3l per ct
37,500	Ditto Fifths..........20l sh 4l pd	7¾l a8¼l	3l per ct
8,000	Hull and Selby............ 50l sh	5la0l	
36,000	London and Brighton ......50l sh	37l a¼l	
33,000	London & Croydon..Av. 18l 15s 9d	11¼la¾l	
20,000	London and Greenwich .... 20l sh	6¼la¾l	7s per sh
9,000	Ditto New .... 16l sh	17¼l a¾l	1l per sh
80,000l.	Ditto Debentures (various amounts)		5l per ct
	Ditto Scrip .... 6½l each	6½l a 0l	
24,000	London & Blackwall ...... 25l sh	9la½l	
1,500	Leicester and Swannington..50l sh	55l	2½l
2,100	Leeds and Selby.......... 100l sh		4l per sh
5,100	Liverpool and Manchester..100l sh	195l	9½l per ct
11,475	Ditto Quarter Shares .... 25l sh	47l	9½l per ct
7,968	Ditto Half Shares .... 50l sh	92l a0l	9½l per ct
36,000	London & S. Western, late London and Southampton Av. 38l 17s 9d	55la½l	3l per sh
3,600	Ditto New Shares ....50l sh 25l pd	26la½l	7s 6d
6,000	Do. Portsmouth Branch 50l sh 45l pd	46la0l	5l per ct
25,000	London & Birmingh. 100l sh 90l pd	155la6l	8½l per ct
25,000	Ditto Quarter Shares 25l sh 5l pd	21la2l	8½l per ct
31,250	Ditto .... 32l sh	52la 3l	8½l per ct
25,000	Ditto New.......... 32l sh 2l pd	24½la5 l	
13,000	Manchester & Leeds 100l sh 70l pd	-la0l	
13,000	Ditto Half Shares .. 50l sh 30l pd	30½la1	
30,000	Manchester & Birming. 70l sh 40l pd	22la3l	
10,000	Midland Counties .... 100l sh	82la4l	5l per ct
10,000	Ditto......¼-Shares of 25l 15l pd	20l a1l	"
15,000	North Midland .... 100l sh	64l a 6l	2l per ct
15,000	Ditto Half Shares ....40l sh	31la2l	"
22,500	Ditto ⅓ shares of 32l 6s 8d 15l pd	13¾la 4¼l	
10,250	Northern & Eastern 50l sh 35l pd		
3,762	Severn and Wye .. Average 27l sh	45l	2l 12s psh
1,000	Stockton and Darlington.. Average 106l 13s 4d	255l	14l per sh
28,000	S. Eastern and Dover 50l sh 43l pd	19½la20l	4l per ct
6,000	York & North Midland ......50l sh	86la8l	9l per ct
6,700	Ditto Half Shares....25l sh 15l pd	28½la 9½l	9l per ct
	JOINT STOCK BANKS.		
15,000	Australasia Bank (Chartered) 40l sh	50½la1l	8l per ct
7,500	Ditto New Shares... 40l sh 10l pd	13½la14l	
10,000	Bank of Ceylon (Chart.) 25l sh 15l pd		
20,000	Bank of B. N. America (Chart.) 50l sh 40l pd	34la0l	6l per ct
20,000	Colonial Bank (Chart.) 100l sh 25l pd	27¼l a¾l	8l per ct
2000	Com. Bk. of London 1000l sh 200l pd	170l	
4,000	Ionian State (Chart.) ......25l sh	20la1l	
30,000	London and Westminster Bank 100l sh 20l pd	21¼la¾l	6l per ct
10,000	New Shares ....100 sh. 15l pd	—l a 0l	
72,432	London Joint Stock Bank 50l sh 10l pd	12⅛l a⅜l	5l per ct
20,000	National Bank of Ireland..50l sh 17½l pd	16l a0l	6l per ct
10,000	Do. Provincial Bank of England 100l sh 35l pd	34la ½l	6l per ct
7,739	Do. New 20l sh issued at 2l 10s pm 10l pd	0la10l	6l per ct
20,000	Provincial Bank of Ireland 100l sh 25l pd	40la1l	8l per ct
4,000	Ditto New.............10l sh	15la16l	8l per ct
20,000	Union Bank of Australia..25l sh	29¾l a30l	50s pr sh
12,000	Ditto New 25l sh 20l pd	23la ½l	
6,000	Union Bk. of London 50l sh 10l pd	9½l a0l	5l per ct
50,000	West of England and South Wales District Bank ..20l sh 12½l pd	11½l a12l	6l per ct

Shares.	CANALS.	Price.	Dividend
1,766¼	Ashton and Oldham Av. 97l 18s sh	100l	7l
1,482	Ashby-de-la Zouch Average 113l sh	72la0l	4l
720	Barnsley......................160l sh	250l	14l
1,260	Basingstoke ....100l sh	5l	
1,005	Brecknock & Abergavenny 150l sh	92l a0l	6l
8,800	Birmingham 1-16th sh. 8l 15s	198l a0l	10l
4,000	Birm. & Liverpool Junction 100l sh	21l a0l	
100,000l	Do. do. Debentures (var. amounts)		
600	Bridgewater and Taunton..100l sh	60l	3l
159,631l	15s 0d Calder and Hebble..100l sh	300la5l	18l
500	Coventry .... 100l sh	300l ex d.	20l
20,000	Danube and Mayne..41l 13s 4d sh	29l	
2,060¾	Dudley ....100l sh	92la0l	5l
3,575¾	Ellesmere and Chester Av. 133l sh	76la0l	4l
1,297	Forth and Clyde ..Av. 400l 16s sh		30l
11,600	Grand Junction .... 100l sh	111l a12l	7l
2,849½	Grand Union .... 100l sh	27la0l	1¾l
1,500	Grand Surrey.... .... 100l sh	15l	
120,000l	Ditto Debentures .... 100l sh	67l	4l per ct
3,096	Grand Western ....100l sh	10l	
600	Glamorgansh. Av. cost 172l 13s 4d	210l	13l 12s 8d
5,000	Gloucester and Berkley .. 100l sh	10la0l	
6,239	Huddersfield .. Aver. 57l 6s 6d sh	23l a0	2l
25,328	Kennet & Avon Av. 39l 18s 10d sh	- la0l	1l 10s
11,699½	Lancaster....Average 47l 6s 8d sh	27½la0l	1l 10s
2,879¾	Leeds and Liverpool......100l sh	740l	34l
18¾	Ditto (New)..................80l sh		16l
540	Leicester....................140l sh	155l	12½l
1,897	Leicester & Northamp. Av. 83l 10s	71la0l	5l
70	Loughborough....Av. 142l 17s sh	1570l	84l
3,000	Macclesfield..............100l sh	20l a2l	1½l
2,409	Monmouthshire ....100l sh	200l	10l
711	Montgomery (East. Branch) 100l sh	100l	5l
500	Mersey and Irwell.................	545l	25l
247	Neath.........................100l sh	365l	20l
521	Oakham..Average cost about 130l	—la0l	2l
1,786	Oxford.......................100l sh	575l a0l	30l
2,400	Peak Forest Average about 78l sh	73l	5l
2,520	Portsmouth and Arundel .. 50l sh		
2,000	Ditto New ....25l sh		
21,418	Regent's (or London) Average 33l 17s 2d sh	9l	5s 6d
5,669	Rochdale..........Average 85l sh	85l	6l
500	Shropshire ....100l sh	138l	8l
800	Somerset Coal ....150l sh	120l	12l
3,600	Ditto Lock Fund......12l 10s sh	11¼l	6l per ct
700	Stafford and Worcester....140l sh	620l	36l
500	Shrewsbury ....125l sh	280l	15l
300	Stourbridge ....145l sh	396l	20l
3,647	Stratford-on-Avon Av. 79l 9s 8d sh	32la3l	2l
200	Stroudwater................150l sh	500l	28½l
533	Swansea ....100l sh	232l a0l	15l
1,300	Thames and Severn, black 100l sh	36l	2l
1,150	Ditto ditto red..100l sh	38l	2l
2,600	Trent and Mersey......¼ sh 50l	500l	32l 10s
8,149	Thames and Medway, Average 19l 5s 8d sh	2l	
3,200	Ulster...............50l sh pd		
1000sh 1000 ½	Warwick and Birmingham 100l sh	200l a10l	14½l
980	Warwick and Napton.... 100l sh	117l a 0l	10l
6,000	Worcester and Birmingham, Av. 78l 8s sh..	54l a5l	4l
5,000	Wilts and Berks, Av. 67l 10s 8d sh	28l a0l	1l 16s
905	Wey and Arun..........110l sh	—l	1l
	MISCELLANEOUS.		
10,000	Anti Dry Rot Company .. 18½l sh	0la0l	5s per sh
10,000	Assam Tea Company 50l sh 12½l pd		
1,080	Auction Mart .... 50l sh	20l	20s pr sh
10,000	Australian (Agricultural) 100l sh 28l 2s pd	38l a9l	35s pr sh
10,000	Canada Company (Chartered) 100l sh 32½l pd	27la8l	6l per ct
5,000	Droitwich Patent Salt .... 25l sh	15la0l	16s
2,700	Equitable Reversionary Interest Society 100l sh 60l pd		4l per ct
20,000	General Steam Navigation Company 15l sh 14l pd	23½l a4½l	1l 8s pr sh
1,800	Ditto Cemetery (Chartered) 25l sh		6l per ct
1,800	Ditto New (Chartered) 25l sh		6l per ct
2,100	Hungerford Market ...... 100l pd	32l	30s pr sh
24,800	Ditto Debentures (var. amounts)..		5l per ct
5,000	London Cemetery (Chart.) 20l sh		

END OF VOLUME XV.

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